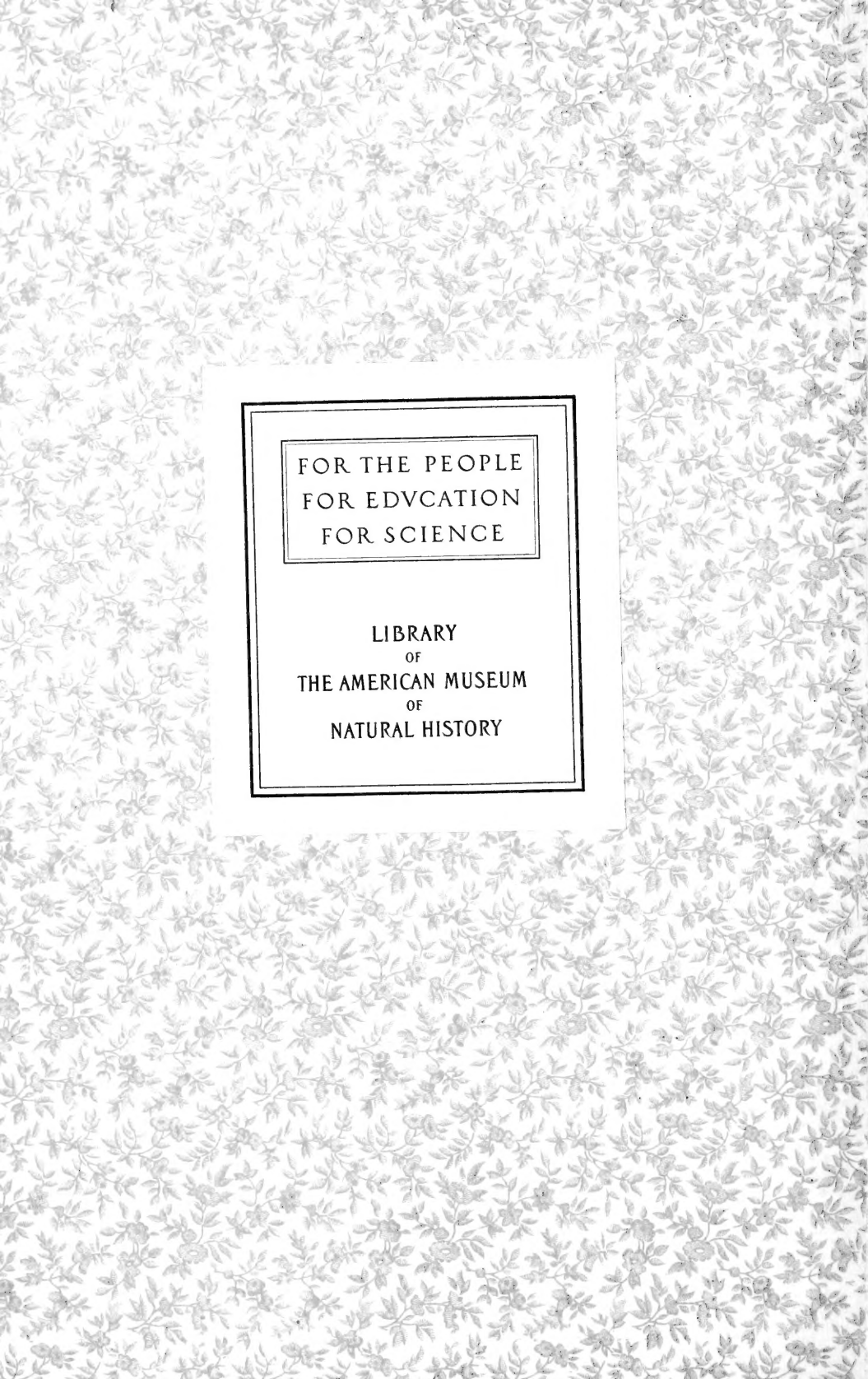


HISTORY
OF THE
BIRDS OF KANSAS

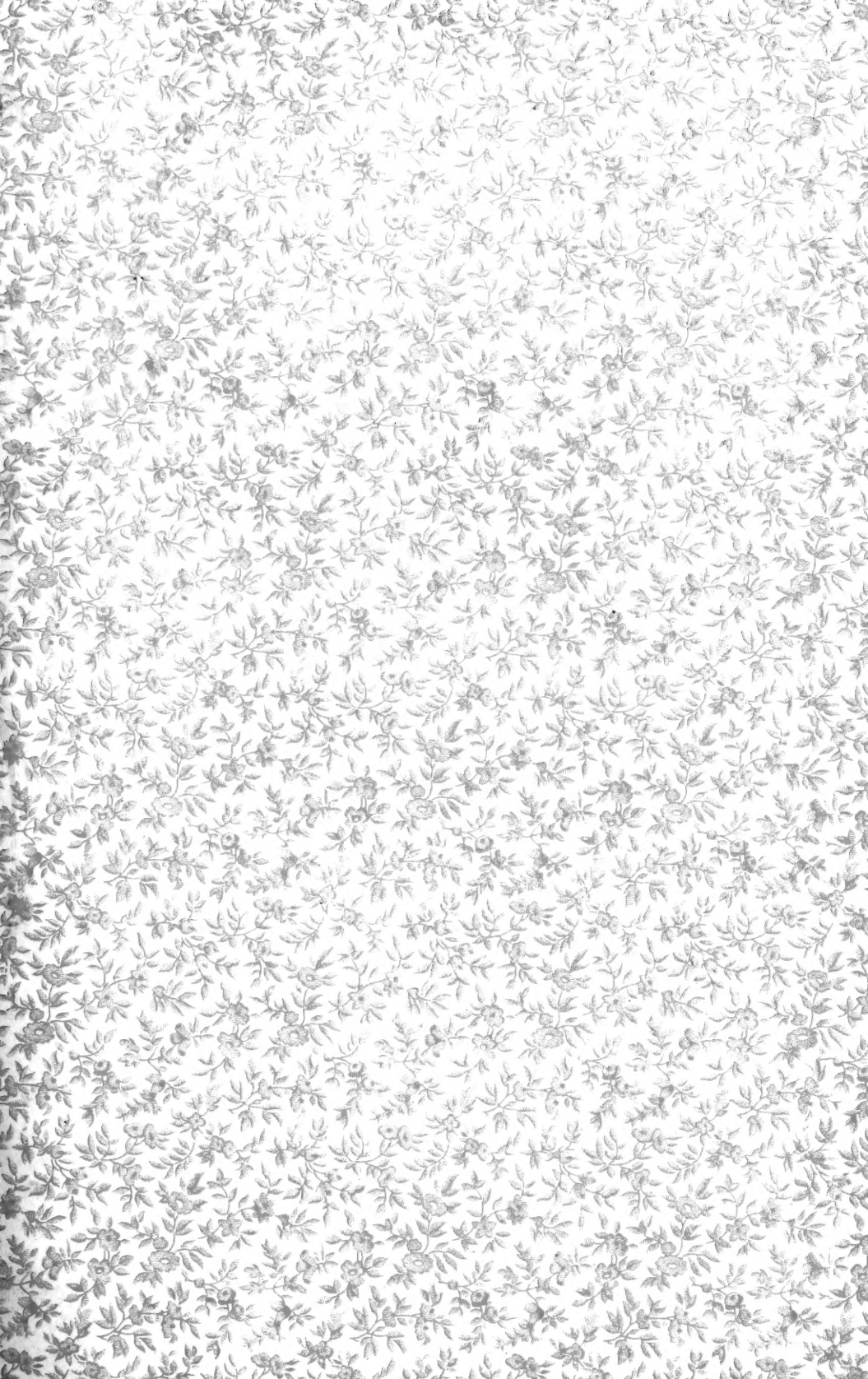
N. S. GOSS.

ILLUSTRATING 529 BIRDS.



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HISTORY

OF THE

BIRDS OF KANSAS

By N. S. GOSS.

ILLUSTRATING 529 BIRDS.

With the author's kindest regards.

N. S. Goss

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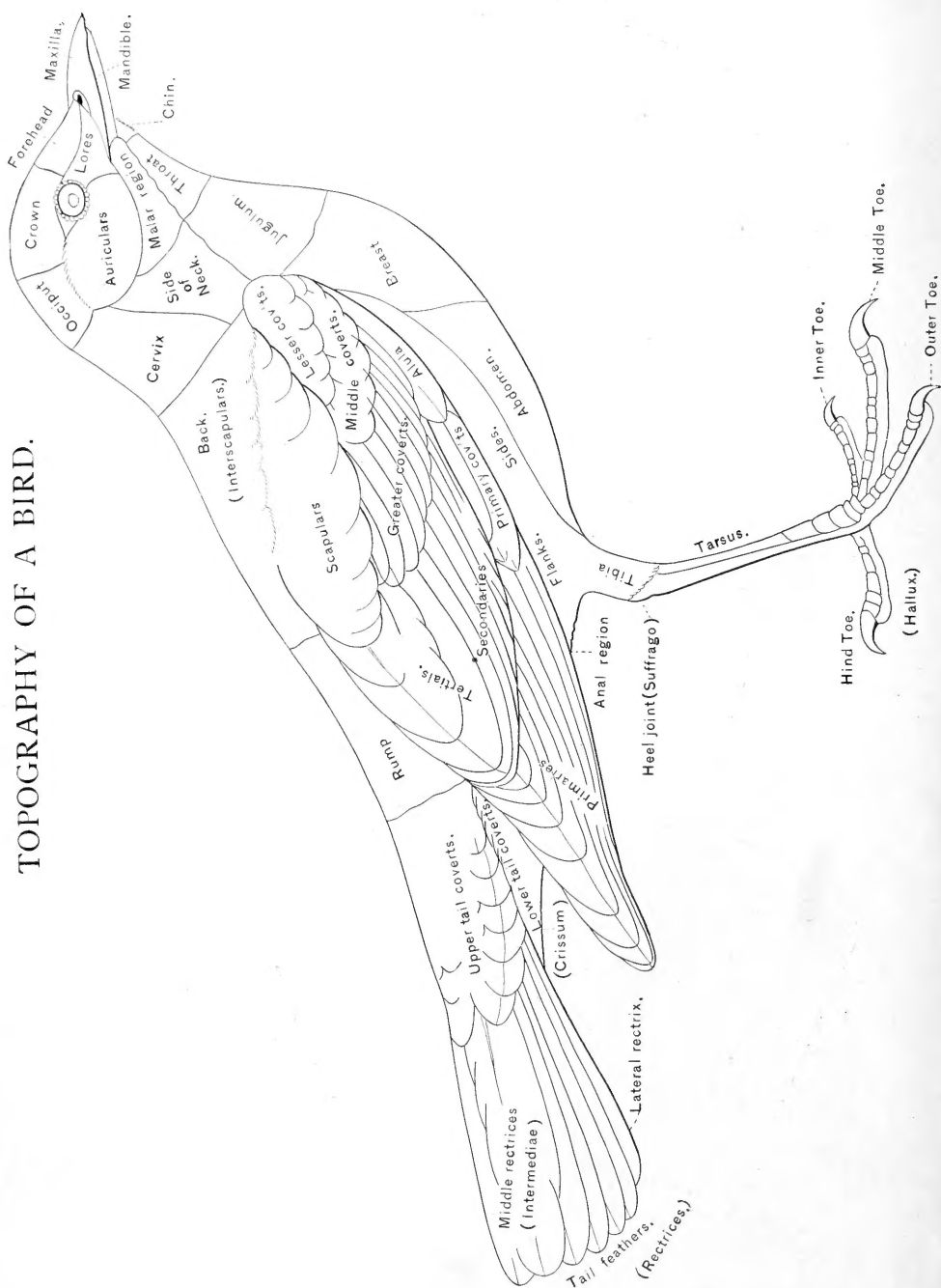
TO MY BROTHER,

CAPT. B. F. GOSS, *Oologist*,

WITH WHOM I HAVE SPENT SO MANY, MANY, PLEASANT
HOURS IN THE FIELD,

THIS WORK IS AFFECTIONATELY INSCRIBED.

TOPOGRAPHY OF A BIRD.



SEE GLOSSARY, IN CONNECTION WITH THIS PLATE, FOR OTHER TERMS USED.

EXPLANATIONS.

THE title of this work is explanatory of its object, and therefore does away with the usual preface or introductory remarks, further than to say, that the author's aim has been to present to the general reader, as well as to the student interested in bird life, a book containing the latest knowledge in regard to the habits, etc., of our birds. It embraces 343 species and subspecies. Several other species and subspecies are, without doubt, entitled to recognition in this work, but they have not as yet been observed in the State. The photogravure illustrations represent 529 mounted birds (my own work) in "The Goss Ornithological Collection."

The characteristic descriptions of the different orders, families, genera, species and races are chiefly from "North American Land and Water Birds," by Baird, Brewer and Ridgway, with the necessary changes in nomenclature and classification to conform with that of the American Ornithologists' Union. I have also quoted freely from Mr. Ridgway's "Manual" and "Birds of Illinois," and occasionally from Dr. Elliott Coues' "Key to North American Birds." In all cases where credit is not given, the characteristic descriptions are referable to the first-named works. I follow these works because they are more complete than I could possibly make them from the small number of specimens at hand, or to which I have ready access.

The descriptions of the nests and eggs (where credit is not given) are from notes of my own observations in the field, and

upon the valuable collection made by my brother, Capt. B. F. Goss, and now on display in the Milwaukee Public Museum.

The five letters, B., R., C., G. and U., each followed by a number, stand respectively for Prof. Spencer F. Baird's Catalogue of 1858, Mr. Robert Ridgway's Catalogue of 1881, Dr. Elliott Coues' Check List of 1882, my Catalogues of 1883 and 1886, and the American Ornithologists' Union Check List of 1886. The dash after any of these letters shows that the bird is not contained in that list.

The species are distinguished by consisting of two terms, the subspecies of three terms; for example:

Merula migratoria.

AMERICAN ROBIN.

Merula migratoria propinqua.

WESTERN ROBIN.

The dimensions of the birds and eggs, as given, represent their approximate average measurements in inches and hundredths.

Directions.—"Length:" Distance from tip of bill to end of longest tail feather. "Stretch of wing:" Distance from tip to tip of outspread wings. "Wing:" Distance from the bend or carpal angle of the wing to the end of the longest primary. "Tail:" Distance from the root of the longest tail feather or "pope's nose" to its tip. "Tarsus:" Distance between the joint of the tarsus with the leg above and the lower edge of the lowermost tarsal scutella in front. "Bill:" Distance from the tip of the bill in a straight line to extreme base of culmen. In the description of colors, the "leg" embraces the tarsus.

In the Glossary, I have mainly followed the definitions of ornithological terms in Mr. Ridgway's "Nomenclature of Colors."

I am indebted to Dr. J. A. Allen, Mr. Robert Ridgway and Capt. Chas. Bendire for valuable information kindly furnished.

N. S. Goss.

THE GOSS ORNITHOLOGICAL DEPARTMENT.

ROOMS:

EAST WING, CAPITOL BUILDING.

Topeka, Kansas, February 1st, 1891.



PLATE I.

1. WESTERN GREBE, M. 10. 2. F. 10. 3. HORNED GREBE, W. 4. F. 10. 5. LEAPED GREBE, M. 10. 6. F. 10. 7. PIED-BILLED GREBE, M. 10. 8. LOON, M. 10. 9. F. 10. 10. F. 10. 11. F. 10. 12. F. 10.

HISTORY

OF THE

BIRDS OF KANSAS.

ORDER PYGOPODES.

DIVING BIRDS.

“Legs inserted far backward, the tarsi extremely compressed. Anterior toes fully webbed or else strongly lobed and with broad flat nails (*Podicipidæ*). Bill extremely variable. Habits præcocial in *Podicipidæ* and *Urinatoridæ*, altricial in *Alcidæ*; young dasypædic. Palate schizognathous. Carotids double, except in *Podicipidæ* and some *Alcidæ* (e. g., genus *Alle*).”

SUBORDER PODICIPEDES. GREBES.

Tail feathers wanting. Anterior toes lobed, the nails very broad, flat, and with rounded tips. (*Ridgway*.)

FAMILY PODICIPIDÆ. GREBES.

“Swimmers resembling the Loons in the posterior insertion of the legs, but the toes lobate and semipalmate, instead of completely webbed, the claws broad, flat, and nail-like, instead of normally narrow and curved. Bill variable in shape; nostrils variable, but without an overhanging lobe; wings very short and concave, the primaries covered by the secondaries in the closed wing; tail rudimentary, consisting of a mere tuft of downy, loose-webbed feathers, without perfectly-formed rectrices; plumage of the lower surface remarkably silky and lustrous, usually white.”

GENUS *ÆCHMOPHORUS* COUES.

“Neck extremely long (almost as long as the body), the bill longer than the head, very slender and acute (the length of the culmen five to six times greater than the depth through the base), straight, or even slightly recurved; tarsus

equal to the middle toe and claw. Plumage plain plumbeous dusky or blackish above, pure white beneath, including the whole under side of head and neck; much the same at all seasons and stages."

***Æchmophorus occidentalis* (LAWR.).**

WESTERN GREBE.

PLATE I.

Accidental visitant. For this addition to our State list, we are indebted to Prof. F. H. SNOW, who reports the capture of a young male November 3d, 1887, on the Kansas River, at Lawrence.

B. 704. R. 731. C. 845. G. —, —. U. 1.

HABITAT. Western North America, from Lower California and Mexico to Manitoba, breeding nearly throughout its range.

SP. CHAR. "*Adult, full breeding plumage:* Pileum and nape slaty black; remaining upper parts brownish slate, the remiges paler and more grayish, with the inner webs chiefly white; concealed bases of primaries and outer webs of secondaries next the shaft also white. Entire lower parts satiny white, abruptly defined against the black of the pileum and nape; sides, beneath the wings clouded with grayish; lores usually brownish gray, sometimes white. Bill olivaceous, becoming clear yellowish terminally and along the commissure; iris bright clear rose red; legs and feet greenish olive in the dried skin. *Adult (and young), in winter:* Similar, but pileum and nape brownish slate, like the back. Bill dull, rather light yellow, the lower mandible deepening into orange terminally; culmen and broad longitudinal space on the side of the basal two-thirds of the lower mandible dark olive green, the former nearly black; iris pure carmine (having much the appearance of a red currant), growing narrowly whitish around the pupil; tarsi and toes dull olivaceous yellow, the outer side of the tarsus and joints of the toes nearly black. *Downy young:* Above, uniform brownish gray, the nape and pileum lighter; lower parts uniform white; bill blackish. No streaks or other markings whatever about the plumage."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	26.00	37.00	8.25	2.00	2.90	2.80
Female . . .	24.00	35.00	7.50	1.60	2.85	2.60

The birds are quite common west of the Rocky Mountains; breeding in reedy ponds and lakes, east to Manitoba; wintering south into Lower California; but its capture at Lawrence is the first mention that I can find of its occurrence upon the east side of the mountains south of the breeding grounds. I have noticed this large species at San Diego several times, and in the winter

and early spring of 1882, I had a good opportunity to observe them on the waters of Puget Sound. The birds ride the water lightly, and their silky plumage, slender bill, long, waving neck and graceful carriage can but attract the attention of the most indifferent of observers. It ranks high among the water birds, and is by right the queen of the family. Like all of the race, they are expert swimmers and divers, and can quietly sink out of sight in the water without any apparent motion; but their natural manner of diving is to spring with a stroke of their feet, almost clearing the water and disappearing about three feet from the starting point. They are at home on the waves, and it is almost impossible to force the birds to take wing; but when in the air fly with great rapidity, with neck and feet stretched out to their full extent, and in alighting often do not attempt to slacken their speed, but strike the water with partially closed wings, with a force that carries them on the surface from twenty to forty feet.

Their nests are usually built on broken down reeds or rushes growing in the water from two to three feet deep, and made of decayed vegetation brought up from the bottom. Eggs two to five; dull bluish white. A set of four eggs collected at Devil's Lake, Dakota, June 1st, 1884, measure: 2.20x1.47, 2.26x1.47, 2.30x1.49, 2.32x1.50; in form, vary from elliptical ovate to enlongate ovate.

Two sets of eggs, one of four, the other of five, taken by Capt. Chas. Bendire, May 28th, 1883, on a marsh in Klamath county, Oregon, average 2.31x1.52. He writes that they often lay seven eggs, and possibly more.

GENUS *COLYMBUS* LINNÆUS.

"Neck much shorter than the body; bill about equal to the head, stout (length of the culmen about three and a half times the depth through the base), the tip blunt, and the outlines more or less convex; tarsus shorter than middle toe with claw. Breeding plumage ornamented by colored tufts or patches about the head, the winter plumage and the young very different."

SUBGENUS *DYTES* KAUP.

"Size small; bill much shorter than head, compressed deeper than wide at base; tarsus about as long as the middle toe without the claw."

Colymbus auritus LINN.

HORNED GREBE.

PLATE I.

Migratory; rare. Arrive the middle to last of April; begin to return in September.

B. 706. R. 732. C. 848. G. 317, 1. U. 3.

HABITAT. Northern hemisphere; breeding chiefly north of the United States; wintering in the southern States and on the Pacific coast south into Lower California.

SP. CHAR. "*Adult, breeding plumage*: Head generally (including the fluffy tufts on each side of the upper neck) slightly glossy dull greenish black, becoming gradually dull sooty slate on the forehead; lores dull ochraceous rufous, communicating with a broad superciliary stripe of bright ochraceous, which continues, gradually widening, to the sides of the occiput; fore neck rich rufous. Upper parts dusky, the feathers sometimes with indistinctly paler margins; secondaries chiefly or entirely white. Lower parts white, the sides mixed chestnut rufous and grayish dusky. Bill bluish black, its tip yellow; short loral space bright carmine, as is the iris, its inner margin white; edges of eyelids grayish blue; feet dusky externally, internally and on anterior and posterior ridges of the tarsus dull yellow; claws dusky. *Winter plumage*: Pileum, nape and sides of the jugulum smoky slate; under part and sides of the head, lores, and lower parts generally, white; jugulum faintly shaded with pale grayish, and sides clouded with dark grayish. Upper parts as in the summer plumage, but more slaty. Bill bluish gray, as in the bare loral space; the eye bright carmine, with an inner white edge; the feet bluish gray. *Downy young (half grown)*: Pileum and nape dusky; sides of the head with two dusky stripes and several irregular spots of the same color; throat with a dusky streak on each side. Otherwise similar in color to the winter plumage."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	14.50	25.25	5.65	1.60	1.80	1.00
Female . . .	13.25	23.50	5.40	1.40	1.80	.85

I have had a good opportunity to observe the birds in southern California and on the northwest and the northeast coasts, and found them in each locality quite common. July 19th, 1880, I found several pairs of the birds nesting in a small, narrow pond of fresh water, on Grosse Isle, one of the Magdalen group, in the Gulf of St. Lawrence. It was covered with a dense growth of rushes, with the exception of a strip of deep, open water in the center. I shall never forget that day: I was extremely anxious to procure their eggs, and wanted a pair of

the birds in breeding plumage. The birds were very shy, and the rushes too thick to see them from the shore; the water was cold, and, in order to find their nests, I had to wade in water from two to three feet in depth. While in motion, I did not suffer much with cold, but in order to get the birds was forced to stand for a long time motionless in the water (barring the shivering and chattering of teeth), while my man was beating the water along the shore with a pole. The frightened birds would not rise, but crossed the open space from side to side under the water; one passed, with closed wings, close beside me, but its lobate feet, that are placed so far behind, sculled it with surprising velocity.

It is said by some writers that the birds do not use their wings under the water. This may be so, but I am inclined to think, when out of the reeds or rushes and with nothing to catch or tangle, that they do use them to accelerate their speed. In the examination of their stomachs, however, I find their food consists largely of crustacea (crawfish the favorite), water newts, insects, and all forms of low animalcula, with traces of vegetation and, of course, minnows; but fish are not so essential to sustain life, as is the case with many of the expert divers, and they may not have occasion to use their wings often.

Away from their breeding grounds the birds do not, as a rule, skulk or hide when hunted, but dive, coming to the surface at a safe distance, and at once take wing, flying swiftly and low, repeating as often as approached, making the chase, whether in a boat or otherwise, tiresome and almost hopeless.

Before leaving the pond I succeeded in finding two nests, without eggs, that had the appearance of having been lately set upon (the downy little chicks leave their nests as soon as hatched). I killed one about two weeks old; (I have the same in the Goss Ornithological Collection.) I also shot a few of the birds, and took from the ovary of a female a fully-formed egg, 1.71x1.20, pure bluish white; but, as the loose, puffy feathers about the head were beginning to drop off, I think the breeding season was nearly over.

The two nests that I found were built in water about two feet

deep, and on the old, broken-down rushes; they were made of old, decayed rushes, leaves, and debris gathered from the bottom; were quite bulky, and piled up until they floated several inches above the water—at least two inches in the center of the nest—and were firmly held in place and hid by the standing, growing rushes, and were about ten rods apart; from this I am led to think that they do not build in communities like their cousins, the Eared Grebes.

Eggs four to seven, 1.76x1.21, bluish white, but generally more or less stained. A set of six eggs, collected at Ogden, Utah, measure: 1.70x1.21, 1.70x1.22, 1.76x1.22, 1.78x1.22, 1.80x1.20, 1.80x1.21; in form, elliptical ovate.

***Colymbus nigricollis californicus* (HEERM.).**

AMERICAN EARED GREBE.

PLATE I.

Migratory; rare in eastern Kansas; common, and may occasionally breed in western Kansas. Arrive the last of April to middle of May. Return early in September, a few remaining into November.

B. 707. R. 733. C. 850. G. 318, 2. U. 4.

HABITAT. Western North America, east to the Mississippi river, north to Great Slave Lake, south into Central America. Abundant from the plains westward; breeding nearly throughout its range.

SP. CHAR. "*Adult, breeding plumage:* Head, neck and upper parts dull black; on each side of the head, behind the eyes, and occupying the whole of the postocular and auricular regions, a flattened tuft of elongated, narrow, and pointed feathers of an ochraceous color, those of the lower part of the tuft inclining to rufous or ferruginous, those along the upper edge straw yellow or buff, sometimes, but rarely, forming a rather well-defined streak; fore part of head sometimes inclining to grayish or smoky dusky. Upper parts blackish dusky, the secondaries—sometimes also the inner primaries—mostly or entirely white. Lower parts satiny white, the sides mixed chestnut rufous and dusky. Bill deep black; iris bright carmine, with an inner whitish ring; legs and feet dusky gray externally, greenish gray on the inner side. *Winter plumage:* Pileum, nape and upper parts fuliginous slate or plumbeous dusky; malar region, chin and throat white; auricular region white, sometimes tinged with pale grayish buff or light grayish; fore part and sides of neck pale dull grayish; lower parts satiny white, the sides plumbeous dusky. Upper mandible greenish black, growing pale ashy olive green on basal third of the commis-

sure (broadly) and on the culmen; lower mandible ashy olive green, paler below, and more yellowish basally; iris bright orange red, more scarlet outwardly, and with a fine thread-like white ring around the pupil; tarsi and toes dull blackish on the outer side, passing on the edges into olive green; inner side dull light yellowish green; inner toe apple green. *Young, first plumage:* Similar to winter adults, but colors more brownish. *Downy young:* Top of the head, as far down as the auriculars, dusky, the forehead divided medially by a white line, which soon separates into two, each of which again bifurcates on the side of the crown (over the eye), one branch running obliquely downward and backward to the sides of the nape, the other continued straight back to the occiput; middle of the crown with a small oblong or elliptical spot of bare-reddish skin. Suborbital, auricular and malar regions, chin and throat, immaculate white; fore neck pale grayish; lower parts white, becoming grayish laterally and posteriorly; upper parts dusky grayish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	12.75	21.50	5.20	1.60	1.50	1.00
Female . . .	12.00	20.25	5.00	1.50	1.45	.90

June 4th, 1877, I had the pleasure of finding about one hundred pairs of these birds nesting in a little cove of Como Lake, a small alkali lake without outlet, in the Territory of Wyoming, on the line of the Union Pacific Railway; altitude 6,680 feet. The nests were in a narrow strip of rushes, growing in water eighteen inches deep, and about one hundred and thirty feet from the shore. Between the rushes and the shore was a heavy growth of coarse marsh grass, the whole covering not over from one to one and one-half acres in area. The bank being a little higher than the ground back of it, the approach could be made unobserved, and my appearance, so unexpected and near, gave the birds no time to cover their eggs, as is their wont, giving me a fine opportunity, on wading out, to see the eggs in their nests. I collected the eggs from two nests, five in each, and counted from where I stood over twenty nests, with from one to five eggs in each. Quite a number of others were completed, but without eggs, and still others were building. The floating nests were made of old broken rushes, weeds, and debris from the bottom, and were partially filled in and around the standing, growing rushes. There were no feathers or other kind of lining. They were from five to ten inches in diameter; the outer edge or rim was from two to three inches above the

water. The eggs in several touched the water, and were more or less stained in their wet beds. The color of the eggs when fresh was white, with a slight bluish shade. The average measurement of the ten eggs was 1.81 by 1.20 inches. I watched the birds closely during the three days I remained there. Those out upon the lake were noisy and active, keeping near the center and closely together. It was their courtship and mating ground, but the birds in going to and from their nesting places were silent and watchful. In leaving their nests, they would dive and come up quite a distance away and swim rapidly for the flock in the lake. I noticed at all times, not far from the breeding grounds, from five to eight birds, evidently sentinels, sitting upon the water with their heads high, ever upon the lookout and ready to give the alarm, but slow to leave their station, in fact, never leaving the little bay, but taking good care to keep out of reach. As soon as I passed by, the birds frightened from their nests would cautiously but quickly return and join the sentinels, from which point they would dive and come up within the rushes. In no instance did I see them swim to or from their nests; they may, however, do so when not disturbed.

In general habits and actions the birds do not appear to differ from others of the family.

GENUS **PODILYMBUS** LESSON.

"Size medium; bill very stout, the length of the culmen less than twice the basal depth; bill much shorter than the head, the culmen much curved terminally; tarsus shorter than the middle toe without claw. No tufts in summer plumage but bill particolored, and throat ornamented by a black patch."

Podilymbus podiceps (LINN.).

PIED-BILLED GREBE.

PLATE I.

Summer resident; not uncommon; in migration abundant. Arrive the last of April to first of May. Begin laying early in May. Remain until late in the fall.

B. 709. R. 735. C. 852. G. 319, 3. U. 6.

HABITAT. British Provinces southward into northern South America, breeding nearly throughout its range.

SP. CHAR. "*Adult, breeding plumage:* Chin, throat, and a spot at the base of the mandible, black; rest of the head and neck brownish gray, darker on the pileum and nape, lighter on the sides of the head, the malar region light ashy, streaked with dusky. Upper parts uniform dusky grayish brown, the remiges paler, the inner webs of the secondaries tipped with white; lower parts grayish white, everywhere spotted with dusky grayish. Bill milk white, crossed past the middle by a black band, the terminal portion more bluish; eyelids white; naked lores bluish; iris rich dark brown, with a narrow outer ring of ochraceous white, and an inner thread-like ring of pure white; tarsi and toes greenish slate black on the outer, and plumbeous on the inner side. *Winter plumage:* Head and neck dull brownish, darker on the pileum and nape, and becoming white on the chin and throat (sometimes also on the malar region); lower parts silvery white, brownish laterally and posteriorly; upper parts as in the summer plumage. Bill horn color, becoming blackish basally and on the culmen; lower mandible more lilaceous, with a dusky lateral stripe; iris of three distinct colors, disposed in concentric rings, the first (around the pupil) clear milk white, the next dark olive brown, the outer pale ochraceous brown, the dark ring reticulated into the lighter; tarsi and toes greenish slate, the joints darker. *Young, first plumage:* Similar to the winter dress, but side and under part of the head white, indefinitely striped with brown, the throat sometimes immaculate. *Downy young:* Head and neck distinctly striped with white and black; a spot of rufous on the middle of the crown, one on each side of the occiput, and one on the upper part of the nape; the latter confluent with two white stripes running down the nape, the others entirely surrounded with black; upper parts blackish dusky, marked with four longitudinal stripes or lines of grayish white running the whole length of the body; lower parts immaculate white medially, dusky grayish anteriorly, laterally and posteriorly."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	14.00	23.50	5.00	1.50	1.50	.80
Female . . .	13.00	22.50	4.80	1.40	1.45	.80

These birds, so active and at home on the water, (like all of the family,) are awkward and almost helpless upon the land, and unless forced by tired wings to drop, are never seen far from the water's edge. They are very shy, and about their breeding grounds secretive, waiting and feeding far away, going to and returning beneath the water, and when upon their nests, if approached, will cover their eggs and slip unobserved under the water, without making a ripple upon its surface. For these reasons some writers are led to think that the birds do not occupy their nests during the day; but this is not so; they are close sitters. To see the birds upon their nests one must hide a long distance away and await their return. Their nest is placed in thick weeds or rushes, in water from two to three feet

deep; composed of old decaying weeds or rushes, brought up from the bottom and piled upon each other in and around the standing stalks, until the fabric reaches the top and floats upon the water, quite a bulky structure. Upon this a small nest is built of debris and bits of slimy moss. Eggs, 1.69×1.17 ; bluish white at first, but soon become stained in their wet beds; usually five; ten have been found in a nest. They are often more or less coated with a chalky calcareous matter; in form, elliptical.

SUBORDER CEPPHI. LOONS AND AUKS.

Tail feathers present, but short. (*Ridgway.*)

FAMILY URINATORIDÆ. LOONS.

"Swimming birds, with the feet situated far back, a well developed hallux, the anterior toes completely webbed and normally clawed; the bill straight, acute, compressed, the nostrils linear, overhung by a membranous lobe; tail normal, but short. Nature præcocial; eggs two or three, dark colored, and more or less spotted.

"The family includes a single genus, *Urinator*, usually, but wrongly, called *Colymbus*."

GENUS URINATOR CUVIER.

"Characters the same as those of the family."

Urinator imber (GUNN.).

LOON.

PLATE I.

Migratory; rare. Arrive the last of March, to last of April. Return late in the fall.

B. 698. R. 736. C. 840. G. 320, 4. U. 7.

HABITAT. Northern part of northern hemisphere. Breeds from about latitude 41° to within the Arctic circle. South in winter to the Gulf of Mexico and Lower California.

SP. CHAR. "*Adult*: Head and neck dull black, with a greenish reflection, this brightest on the lower part of the neck; fore neck crossed by a narrow bar of white longitudinal oblong dots or short streaks; sides of the neck some distance below this crossed by a broad bar of longitudinal white streaks; upper parts black beautifully variegated with white dots, these largest, and nearly quadrate in form, on the scapulars, minute and dot-like on the rump. Lower parts immaculate white, the sides of the jugulum narrowly streaked with black, the sides and flanks black, dotted with white. Bill black, paler at the tip; iris

carmine; legs and feet livid grayish blue, their inner sides tinged with pale yellowish flesh color; claws black, lighter at the base; webs brownish black-lighter in the middle. *Young*: Upper parts dusky, the scapulars, interscapulars and upper tail coverts bordered terminally with plumbeous gray; lower parts, including malar region, chin, throat and fore neck, white, the sides and flanks dusky brown, squamated with grayish. Bill pale yellowish green, the ridge and tip of upper mandible dusky; iris brown; feet dusky externally, pale yellowish flesh color internally, webs dusky, but yellow in the middle. *Downy young*: Uniformly dark fuliginous, lighter and more slaty on the throat, fore neck, jugulum and sides, the entire abdomen velvety yellowish white, shaded with pale ash gray exteriorly. The down short and very dense, very similar to the fur of an otter or other fur-bearing mammal."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	32.00	56.50	14.50	3.50	3.15	3.00
Female	30.00	54.00	13.50	3.25	3.15	2.90

During the summer months the birds are to be found in the northern ponds and lakes, sporting and fishing in the open clear waters; and their plaintive call can often be heard far beyond the range of our sight: a weird sound, more supernatural than real; one that the imaginative mind could well be led to think a wail from Nereus, who was doomed by Poseidon, the god of the sea, to dwell in the waters.

The birds reluctantly leave their northern home, and as a rule linger until the ice closes their watery resorts, wintering largely upon the sea coast. I found them very common during the winter months in the harbor of San Diego; and have often laid upon the railroad track at its crossing of a narrow outlet to a small pond, a little south of the city, and watched the birds pass and repass, invariably coming and going with the tide. As they approached the outlet from either side, they would dive at a safe distance and with the aid of their wings fly beneath its surface with the speed of an arrow; making the water fairly boil around them, and leaving in their wake a silvery streak of bubbles. And once, when upon their breeding grounds in company with my brother, in trying to catch two little chicks not over a week old, the mother passed under our boat several times, in like manner.

It is a difficult matter to force the birds to take wing, and, without a fair breeze to aid them, I never saw one make the

attempt. (All birds naturally rise and alight facing the wind, and the short-winged ones cannot well rise otherwise.) In rising they spring with their feet, striking the air at the same time vigorously with their wings, patting the water for some distance; but once in the air can sustain themselves for a long time, flying very swiftly and direct. When upon the ground the birds cannot rise, and are almost helpless, shuffling and floundering along, using both their wings and feet in a most awkward manner; and for this reason the name they bear (which signifies lame) was given them by the Laplanders.

Their nests are built at or near the edge of the water, on marshy or boggy grounds; they are quite bulky, and made of water grasses, or plants at hand, with a mixture of slimy moss and mud, with a place hollowed out in the center to fit the body. Eggs usually two, but, according to Audubon and Nuttall, sometimes three; vary in size from 3.27×2.10 to 3.90×2.38 . A set collected May 10th, 1878, on Pewaukee Lake, Wisconsin, measured 3.45×2.20 to 3.27×2.21 . Ground color olive brown to olivaceous drab, more or less spotted and occasionally blotched with blackish brown; in form, vary from narrow oval to elliptical ovate.

ORDER LONGIPENNES.

LONG-WINGED SWIMMERS.

“Hind toe small or rudimentary, and elevated, sometimes almost obsolete; anterior toes fully webbed. Bill more or less compressed (nearly cylindrical only in some *Stercorariidæ*), the nostrils linear, never tubular. Habits altricial; young dasypædic. Palate schizognathous. Carotids double.”

FAMILY **LARIDÆ**. GULLS AND TERNS.

“Bill moderately compressed, or sometimes nearly cylindrical, its covering entire; the tips of the maxilla overhanging, or at least meeting, that of the mandible; the culmen more or less curved, but never arched terminally—sometimes nearly straight throughout; symphysis of the mandible usually forming more or less of an angle, this, in most cases, prominent in proportion to the



PLATE II.

1. AMERICAN HERRING GULL; MALE. 2. CALIFORNIA GULL; FEMALE. 3. RING-BILLED GULL; FEMALE. 4. FRANKLIN GULL; MALE. 5. BONAPARTE'S GULL; MALE. 6. SABIN'S GULL; MALE. 7. FORSTER'S TERN; MALE. 8. COMMON TERN; FEMALE. 9. LEAST TERN; MALE. 10. BLACK TERN; MALE.

relative depth of the bill; nostrils sub-basal, perforate; legs and feet of proportionate size. Tail extremely variable in form and length.

"Although including among its very numerous members great extremes of size and form, the family *Laridæ* as here restricted is not divisible into more than two subfamilies, and these are so nearly united through certain forms as to be really more artificial than natural."

SUBFAMILY LARINÆ. GULLS.

"Depth of bill through the angle decidedly greater than through the middle of the nostrils; terminal portion of the culmen decidedly curved; mandibular angle frequently prominent, always distinct. Tail even, except in *Xema* (forked) and *Rhodostethia* (wedge shaped). Size extremely variable, but usually medium or large; sometimes very large."

GENUS *LARUS* LINNÆUS.

"Size exceedingly variable, ranging from that of the smaller Albatrosses down to that of the medium-sized Terns; tail even; tarsus always longer than the middle toe with its claw (except in *L. minutus*), and smoothish behind; colors extremely variable, but young always widely different from the adult."

Larus argentatus smithsonianus COUES.

AMERICAN HERRING GULL.

PLATE II.

Migratory; rare. I have met with the birds in March and November, and, as they occasionally winter as far north as Lake Michigan, it would not be strange if met with in winter along our larger rivers, when not frozen; but in any event they can only be treated as migrants and visitants, as they are only at home about large bodies of water.

B. 661. R. 666a. C. 773. G. 307. 5. U. 51a.

HABITAT. North America in general; breeding from Maine northward, and westward throughout the interior, on the large inland waters, and occasionally on the Pacific coast; south, in winter, to Cuba and Lower California.

SP. CHAR. "*Adult, in summer:* Mantle pale pearl blue (a shade darker than in *L. glaucescens*), the secondaries and tertials passing terminally into white. Outer primary black, more slaty basally, the tip white, and a large white spot across the inner and sometimes the outer web; next quill black, tipped with white, and usually without any white except the apical spot; third, fourth and fifth quills similar, but the basal half, or more, light pearl gray (this extending farther on the inner web), the line of demarcation sharply defined; sixth quill light pearl gray, broadly tipped with white, this preceded by a broad subterminal space of black, widest on the outer web; seventh quill similar, but the black much more restricted, and confined to the outer web; remaining primaries pale

pearl gray, passing gradually into white at ends. Remainder of the plumage snow white. Bill deep chrome or wax yellow, with a large spot of bright red near the end of the mandible; eyelids bright yellow; iris silvery white or pale yellow; legs and feet flesh color, claws brownish black. *Adult, in winter:* Similar, but head and neck, except underneath, streaked with dusky grayish. Bill pale grayish yellow; deepest on anterior half of maxilla, and inclining to flesh color on basal portion of mandible, except along upper edge; angle of mandible with a large spot of dull orange red, becoming dusky toward gonys; iris dull light yellow; eyelids dusky yellowish; legs and feet very pale grayish flesh color. (Fresh colors of a specimen killed at Washington, D. C., November 11th, 1880.) *Young, first plumage:* Prevailing color brownish ash, nearly uniform below, the head and neck streaked with white; upper parts variegated by borders to the feathers and irregular spots of pale grayish buff; primary coverts, remiges and rectrices blackish dusky. Bill dusky black, more brownish basally; iris brown; legs and feet purplish flesh color in life, brownish in the dried skin. *Downy young:* Grayish white, the lower parts (except throat) immaculate; head marked with irregular spots of black, indefinitely distributed; back, wings and rump clouded with dusky grayish. Bill black, the ends yellowish; feet brownish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	25.50	59.00	17.25	7.50	2.55	2.50
Female . . .	23.00	57.00	16.00	6.50	2.40	2.10

The birds ride the water buoyantly, but do not dive, only immersing the head and neck. In their food habits omnivorous, greedy eaters; scavengers of the beach, and in the harbors to be seen boldly alighting upon the masts, and flying about the vessels; picking up the refuse matter as it is cast overboard, and often following the steamers from thirty to forty miles from the land, and occasionally much farther. They are ever upon the alert, with a quick eye that notices every falling object, or disturbance of the water; and as they herald with screams the appearance of the herring, or other small fishes that often swim in schools at the surface of the water, they prove an unerring pilot to the fishermen, who hastily follow with their lines and nets; for they know that beneath, and following the valuable catch in sight, are the larger fishes that are so intent upon taking the little ones in out of the wet as largely to forget their cunning, and thus make their capture an easy one.

The birds are abundant on the Atlantic coast, decreasing in numbers west, and I think rare on the Pacific coast. I have collected three winters along that coast, and during the time did not meet with a single bird.

In the month of June, 1880, I found the birds breeding in large communities on the little islands adjacent to Grand Manan; many were nesting in the spruce tree tops, from twenty to forty feet from the ground. It was an odd sight to see them on their nests, or perched upon a limb chattering and scolding as approached. The greater number, however, were nesting on the rocks. In the trees I had no difficulty in finding full sets of their eggs, as the egg collectors rarely take the trouble to climb; but on the rocks I was unable to find an egg within reach; the eggers going daily over the rocks. I was told by several that they yearly robbed the birds, taking however but nine eggs from a nest, as they found whenever they took a greater number, the birds so robbed would forsake their nests, or, as they expressed it, cease to lay; and that, in order to prevent an over collection, they invariably dropped near the nest a little stone or pebble for every egg taken.

The young birds grow rapidly. July 26th, I saw at Percy Rock, in the Gulf of St. Lawrence, young birds upon the water fully grown. They do not leave their nesting grounds until able to fly; though half grown birds are occasionally seen on the water, that by fright or accident have fallen. Their nests are composed of grass, (often moss and lichens, especially in the trees,) sea weeds, and a mixture of dirt. In the trees they are quite bulky and well woven together, but loosely and slovenly made upon the rocks, and varying greatly in their size; some with only a slight lining.

Eggs, usually three, 2.75x1.90. The ground color varies from a pale olive drab to a greenish and bluish white, irregularly spotted and blotched with lilac and pale yellowish to dark sepia brown, the markings occasionally the thickest and running together about the larger end; in form, ovate.

Larus californicus LAWR.

CALIFORNIA GULL.

PLATE II.

A rare visitant. One specimen taken by me on the Arkansas River, in Reno county, October 20th, 1880.

B. 663. R. 668. C. 777. G. 308, 6. U. 53.

HABITAT. Western North America, from Mexico to Alaska, breeding northward from about latitude 38°.

SP. CHAR. "Slightly smaller than *L. occidentalis*, with much weaker bill and lighter mantle. *Adult, in summer:* Mantle deep bluish cinereous, intermediate in shade between the plumbeous of *occidentalis* and the pearl blue of *argentatus*, the secondaries and tertials broadly (for about one inch) tipped with white. Outer primary black, its terminal portion white for about two inches, with or without a black subterminal spot; second quill also black, the tip white and usually (though not always) marked by a white spot (sometimes one inch long) near the end; third quill black, tipped with white, the base plumbeous; fourth with the basal half plumbeous blue, the terminal half black, tipped with white; fifth, similar but the black more restricted, and the line of demarcation between the black and blue still more sharply defined; sixth, lighter plumbeous blue, passing on to white toward the end, and crossed by a wide subterminal band of black; remaining quills cinereous blue, broadly tipped with white. Remainder of the plumage snow white. Bill yellow, varying from greenish lemon to chrome, the terminal third of the mandible bright red (varying from orange red to carmine), the tip again yellow; a more or less distinct dusky spot in or immediately in front of the red, and one directly above it on the maxilla, the tip of which is sometimes grayish white; rictus and eyelids vermilion red; iris dark hazel or vandyke brown; legs and feet pale pea green, sometimes tipped with grayish. *Adult, in winter:* Similar, but head and neck (except underneath) broadly streaked with grayish brown. *Young, first plumage:* Above, coarsely spotted, in nearly equal quantities, with brownish slate and grayish buffy white, the latter bordering the feathers, and forming broad irregular bars, mostly beneath the surface; primary coverts, remiges and rectrices dusky black, the inner primaries more grayish, the primary coverts narrowly tipped with white, and the outer tail feathers with irregular broken bars of the same. Head, neck and lower parts mottled or clouded with grayish white and brownish gray, the latter prevailing on the head and neck—nearly uniform on the nape. Bill dusky, black at the tip and brownish basally; iris brown; legs and feet brownish (in the dried skin). *Downy young:* Grayish white, purer white centrally beneath, where immaculate; head marked by irregular dusky black spots, of indefinite arrangement, but most numerous above; upper parts clouded with dusky grayish. Bill black, tipped with pale yellowish brown."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	22.50	55.50	16.00	6.75	2.33	2.00
Female . . .	21.50	54.00	15.25	6.25	2.30	1.85

In the winter and spring of 1881 and 1884, I noticed the birds quite often at San Diego, and found them quite common on the northwest coast, in fact abundant, during the early spring, about Vancouver and the San Juan Islands.

They fly rather slowly and gracefully over the water; picking up here and there floating matter and the little fishes at the

surface, often dropping upon a fish with a force that carries them nearly under. They do not tarry long in the harbors for the offal, and are, in their food habits, I think, less parasitic than many others of the same family.

The birds winter on the coast but breed inland, and in communities, upon the islands in the larger ponds and lakes. Captain Chas. Bendire found them breeding abundantly on Lake Malheur, Oregon, and Mr. Robert Ridgway, at Great Salt Lake and Pyramid Lake, in the month of May, 1868.

Their nests are usually placed upon rocks and bare spots of dry ground, but occasionally on the tops of low standing bushes; and are made of grasses, sticks, feathers, or any loose material at hand, and are slightly hollowed in the center. Eggs, usually three or four. One set of three eggs, taken May 31st, 1883, by Mr. W. C. Flint, on the Farallones Isles, measure: 2.84x1.96, 2.80x1.96, 2.88x1.92. Ground color bluish white to brownish gray, rather thickly spotted, sometimes more or less blotched, with occasional zigzag markings of various shades of brown, and shell stains of lilac; in form, oval to ovate.

***Larus delawarensis* ORD.**

RING-BILLED GULL.

PLATE II.

Migratory; quite common. Arrive the last of April, to first of May; returning in September.

B. 664. R. 639. C. 778. G. 309, 7. U. 54.

HABITAT. North America at large; south in winter to Cuba and Mexico. Breeding in high northern latitudes.

SYNCHAR. "Smaller than *L. californicus*, the bill more slender, and without red spots, the mantle much paler, the iris yellow, and feet greenish yellow in the adult. *Adult, in summer:* Mantle pale pearl blue (much as in *L. argentatus*, much paler than in *L. brachyrhynchus* or *L. canus*), the secondaries and tertials passing terminally into pure white. Outer primary black, with a white space 1.25 to 1.50 inches long near the end, involving both webs, the shaft, however, black; second quill similar, but with the white space smaller, and the extreme tip also white; third, with basal half pale pearl gray, and the apical white spot larger; next similar, but the subterminal black more restricted, the line of demarcation between it and the pale pearl gray still more sharply defined; fifth pale pearl gray, passing terminally into white, but crossed near the

end by a wide band of black, about .75 of an inch wide; sixth quill pale pearl gray, passing into white terminally, and marked near the end by a more or less imperfect black spot; remaining quills pale pearl blue, passing terminally into white, and without a trace of black. Bill greenish yellow, crossed near the end by a blackish band, the tip sometimes tinged with orange; rictus and eyelids vermilion red; interior of mouth rich orange red, more intense posteriorly; iris clear pale yellow; feet pale yellow, sometimes tinged with greenish; claws black. *Adult, in winter:* Similar, but the head and neck, except beneath, streaked with brownish gray. *Young, first plumage:* Above, brownish dusky, the feathers bordered with pale grayish buff; primaries blackish dusky, the inner quills bluish gray basally, and tipped with white; secondaries bluish gray on basal half, dusky black terminally, where edged with white; basal two-thirds of the tail pale gray, more whitish basally, mottled with deeper grayish; terminal third dusky black, narrowly tipped with white. Lower parts white, spotted laterally with grayish brown. Bill black, base of lower mandible and edges of the upper toward the base livid flesh color; edges of eyelids livid blue; iris hazel; feet purplish gray; claws brownish black."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	20.00	49.00	15.00	6.50	2.20	1.65
Female . . .	18.75	46.00	14.00	5.50	2.10	1.55

This species is at home on the wing, as well as upon the water, and in the fall of the year, during the early part of the afternoon, can often be seen about the streams or bodies of water sailing and circling in the air.

An examination of their stomachs at such times will show that it is grasshoppers they are after, not pleasure alone. To satisfy myself upon this point, I shot, on the Arkansas River, several of the birds while thus flying, and found grasshoppers in all, also a few beetles. Two of the birds that fell had grasshoppers in their mouths. In other respects their food habits are much like the Herring Gull, often following the steamers a long distance from the shore.

During the winter months I have seen them on the south coast of Florida, and on the Pacific side, south to Altata, Mexico. In migration, they are common throughout the United States. They breed west of the Rocky Mountains from about latitude 40°, and east of the same from about latitude 50°, north into the Arctic region. Audubon says: "On an island within a few miles of Eastport, Maine, I found these birds breeding in great numbers, in the beginning of May. Their

nesses were placed amid the scanty tufts of grass." But of late years I think they have not been found breeding on the Atlantic coast south of Labrador.

Their nests are placed on the rocks or ground, and made chiefly of sea weed. Eggs usually three. One set, taken June 23d, 1884, on the south coast of Labrador, measure: 2.40 x 1.64, 2.44 x 1.68, 2.40 x 1.68. Ground color varies from a pale bluish white or greenish tint to olive drab, with pale markings of lilac, and irregular spots and blotches of varying shades of brown, thickest about larger end; in form, oval to ovate.

***Larus franklinii* Sw. & Rich.**

FRANKLIN'S GULL.

PLATE II.

Migratory; common. My notes show their capture from the last of March to first of May, beginning to return the last of September, and are often to be seen as late as November.

B. 668, 669. R. 674. C. 787. G. 310, 8. U. 59.

HABITAT. Interior of North America, breeding chiefly north of the United States; south in winter to Peru, South America.

SP. CHAR. "*Adult, in summer:* Head and upper part of the neck plumbeous black (more plumbeous anteriorly); an elongated white spot on each eyelid; lower part of the neck (all round), entire lower parts, lower part of the rump and upper tail coverts snow white, the neck and lower parts with a deep tinge of delicate rose pink in fresh specimens. Mantle deep bluish plumbeous, a little lighter than in *L. atricilla*, the secondaries and tertials broadly tipped with white. Tail white, the four to six central feathers tinged with pale grayish blue, deepest on the intermediæ. Primaries bluish gray, the shafts white, the five outer quills marked with a subterminal space of black varying in extent from nearly 2.00 inches long on the second quill to about .50 on the fifth, each quill broadly tipped with white, this occupying on the outer about 1.50 inches of the terminal portion, on the rest less than .50 of an inch; the bluish gray of the basal portion of the quills becoming nearly or quite white where joining the black, and the shafts of the black portion also black; remaining quills light grayish blue, broadly, but not abruptly, tipped with white, the sixth sometimes marked with a subterminal black spot or bar. Bill deep red, with a more or less distinct darker subterminal band; eyelids red; feet deep red. *Adult, in winter:* Similar, but head and neck white, the occiput, with orbital and auricular regions, grayish dusky. Bill and feet brownish, the former tipped with orange reddish. *Young, first plumage:* Top and sides of head (except forehead and lores), back and scapulars grayish brown, the longer scapulars bordered terminally with pale grayish buff; wing coverts bluish gray, tinged with grayish

brown; secondaries dusky, edged with pale grayish blue, and broadly tipped with white; primaries dusky, the inner more plumbeous, all rather broadly tipped with white. Central portion of the rump uniform light bluish gray; lateral and posterior portions of the rump, upper tail coverts, entire lower parts, forehead, lores and eyelids white. Bill brownish, dusky terminally; feet brown (in skin)."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	14.75	37.00	11.25	4.20	1.65	1.13
Female . . .	14.00	36.00	11.00	4.00	1.60	1.10

This beautiful bird, called by the farmers the Prairie Dove, feeds largely upon the land, often great distances from the water. In the spring it hovers over the newly-plowed lands, and often follows the plow, picking up the insect life, larva and worms exposed in the furrow; and in the fall catches the grasshoppers in the air, often flying high and circling.

The birds are easily tamed and make interesting pets; one that I kept for some time became greatly attached to me; would follow me about the room, and the moment I stopped, whether standing or sitting, would perch upon one of my feet and commence dressing up his feathers; climbing back as often as I would toss him off. Most birds dislike to be handled, but this one seemed to enjoy it, rubbing his head and bill against my hand and cheek, as if coaxing me to caress him.

During the winter I have met with the birds in Central America, and on the southwest coast of Mexico; and they have been found breeding as far south as northern Iowa, and in abundance in the vicinity of Manitoba, and north at least to the 65th parallel. They breed in communities, on low, wet, marshy grounds, in shallow water, upon the tops of broken down rushes. Their nests are made largely of grasses and rushes. Eggs usually three, 2.12x1.45; one set of three eggs, taken May 20th, 1885, by J. D. Preston, on Marsh Lake, Minnesota, measure: 2.00x1.40, 2.12x1.40, 2.08x1.44. Ground color pale grayish green to light olive drab, splashed with rounded and zigzag markings of varying shapes and sizes, of olive brown to dark sepia; thickest and generally forming a wreath around the larger end; in form, rather oval.

Larus philadelphia (ORD.).**BONAPARTE'S GULL.**

PLATE II.

Migratory; rare. Arrive the last of March to last of April; begin to return as early as August.

B. 670. R. 675. C. 788. G. 311, 9. U. 60.

HABITAT. The whole of North America; breeding far northward; south, in winter, to Mexico and Central America.

SP. CHAR. "*Adult, in summer:* Head and upper part of the neck dark plumbeous, the eyelids marked by an elongated white spot. Lower part of the neck, entire lower parts, tail, upper tail coverts, lower and lateral portions of the rump, border of the wing, alulae, primary coverts, and greater portion of the primaries, snow white; the neck and lower parts with a delicate rose-pink blush in fresh specimens. Mantle, including upper and middle portions of rump, delicate light pearl blue. Three outer primaries chiefly white; the outer web of the exterior quill, and the terminal portion of all, deep black; fourth quill similar to the third, but the inner web pale grayish blue; fifth and sixth quills pale grayish blue, with a large subterminal black space, and tipped with white (third and fourth quills also marked with a small white apical spot); remaining quills pale grayish blue, without white tips, but marked near the end, usually on inner web only, with a black spot. Bill deep black; iris dark brown; interior of mouth, with legs and feet, rich, clear orange red; claws black. *Adult, in winter:* Similar, but head and neck white, the occiput tinged with grayish, and the auricular region marked by a spot of dusky gray. Legs and feet flesh color. *Young, first plumage:* Sides and under parts of head and neck, entire lower parts, upper tail coverts, and basal three-fourths of the tail, pure white; crown, occiput, and upper part of the back, brownish gray; a dusky grayish spot on the auricular region; scapulars and posterior interscapulars grayish umber, tipped with pale buff; central area of lesser wing-covert region dusky brownish gray; rest of wing coverts, edges of secondaries, greater portion of inner primaries, with upper and central portions of rump, light grayish blue; band across end of tail black or dusky, the tip narrowly whitish. Outer primary with the entire outer web, and a stripe along the inner next the shaft, with the end, black, the remaining portion white; second and third quills similar, but the white successively more restricted; fourth bluish white on both webs (inner web more bluish), the subterminal portion black for more than an inch, the tip with a small white spot; remaining quills similar, but deeper bluish gray. Bill dusky; feet pale brownish (in skin). *Young, second year:* Similar to the adult in winter plumage, but central lesser wing coverts dusky, tail crossed by a subterminal band of dusky brown, and primaries marked as in the first plumage."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	14.00	33.00	10.50	4.25	1.37	1.10
Female . . .	13.50	32.00	10.20	4.05	1.35	1.12

The birds are said to be common throughout the continent, but I have never been so fortunate as to meet with them often, or in numbers.

In their food habits, are much like the Franklin's Gull. In their northward flights arrive early, and do not tarry long. At Pewaukee, Wisconsin, where I lived during the early settlement of the State, I noticed nearly every spring a few flocks flying about the lake and alighting upon the melting ice, but I cannot recall seeing them on the lake after the ice was wholly gone.

The birds are quite noisy, fly gracefully, and float on the surface of the water as lightly as an egg shell, and when at rest drift as readily in the breeze. They breed in high latitudes, and in communities; their nests are placed on bushes and trees, usually on the branching limbs of the spruce trees, and are made of sticks and lined with grasses, leaves, often moss and lichens, with an occasional mixture of down. Eggs usually three, rarely ever four. One set of two eggs, taken July 5th, 1864, by Mr. Farlane, on Anderson river, Arctic America, measure: 2.08x1.40, 1.96x1.40. Ground color olive gray, with small spots of varying shades of brown, chiefly clove brown, thickest about larger end; in form, oval to ovate.

GENUS **XEMA** LEACH.

"Size small or medium; tail forked; tarsus equal to or rather shorter than the middle toe with claw; adult with a dark hood, the plumage otherwise pearl gray above and white beneath."

Xema sabinii (SAB.).

SABINE'S GULL.

PLATE II.

A rare visitant.

B. 680. R. 677. C. 790. G. 312, 10. U. 62.

HABITAT. Arctic regions in North America; south in winter to New York, Kansas and Great Salt Lake.

SP. CHAR. "*Adult, in summer:* Head and upper part of the neck plumbeous, bounded below by a well-defined collar of black, widest behind; lower part of neck, entire lower parts, tail, upper tail coverts, and lower part of rump, snow white, the lower parts faintly tinged with delicate rose pink in some freshly-killed specimens. Mantle deep bluish gray (nearly the same shade as in *Larus*

franklinii), the secondaries pure white, becoming gradually pale grayish blue toward bases; most of the exposed portions of the greater coverts also white, forming, together with the secondaries, a conspicuous longitudinal white stripe on the closed wing. Four outer primaries black, broadly tipped with white, the inner webs broadly margined with the same; fifth quill, with the greater part of the inner web, and about 1.75 inches of the terminal portion of the outer, white, the remainder black; remaining quills white; outer border of wing, from the carpal back to the primary coverts, including the latter and the alulæ, uniform black. Bill black, tipped with yellow; eyelids red; iris brown; feet dull lead color; claws black. *Adult, in winter:* Similar to the summer plumage, but head and neck white, except occiput, nape and auricular region, which are dull dusky plumbeous. *Young, first plumage:* Crown, nape, back, scapulars, wing coverts and rump brownish gray, each feather bordered terminally with light fulvous or pale grayish buff, this fulvous border preceded on the tertials, longer scapulars, etc., by a dusky internal sub-border; greater wing coverts and secondaries white, as in the adult; primaries much as in the adult. Tail white, with a broad subterminal band of black, the tip narrowly white or pale fulvous; upper tail coverts and entire lower parts white. Bill dusky, brownish toward the base; feet light brownish (in the skin)."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	14.00	34.00	10.50	5.00	1.30	1.05
Female . . .	13.25	32.50	10.00	4.50	1.25	1.00

This elegant bird was first discovered as a new species by Sir Edward Sabine, on the coast of Greenland, while accompanying Ross and Parry in their first Arctic expedition. It has since been found to be quite common during the breeding season in the extreme northern portion of the continent; also in Asia, occurring occasionally in Europe. It winters chiefly within the Arctic circle, but occasionally visits the United States. One, in its migratory or wandering flight, has been captured on the coast of Peru, and its occasional occurrence through the continent may be looked for.

A young male, on the 19th of September, 1876, flew into a billiard saloon in Humboldt, Kansas, at midnight, no doubt attracted there by the light of the burning lamps that brightly reflected out into the darkness. I have the specimen in the Goss Ornithological Collection; also a pair that I shot May 22d, 1882, about thirty miles off the coast from Cape Flattery. There were twelve of the birds in the flock, flying slowly northward, and near the surface of the water.

In habits, appear to be similar to Bonaparte's Gull. They

have been found breeding in numbers on the islands in the Arctic Sea; their nests are upon dry ground, near the water's edge; a slight depression worked out to fit the body, with usually a few blades of grass arranged in a circular manner around the edge. Eggs usually three; Ridgway says: "Eggs two to five, 1.78×1.26 ; ovate or short ovate, deep olive (varying in intensity, however), rather indistinctly spotted or blotched with brown."

SUBFAMILY STERNINÆ. TERNS.

"Depth of the bill through the angle (symphysis of the lower jaw) less than through the middle of the nostrils; terminal portion of the culmen slightly curved, or nearly straight; mandibular angle seldom prominent. Tail forked, except in *Anous* (graduated). Size extremely variable, but usually small; never very large."

GENUS STERNA LINNÆUS.

"Size exceedingly variable, the form and colors less so; tail always decidedly forked, and toes almost fully webbed, but the webs concave, or 'scalloped out' anteriorly."

SUBGENUS STERNA.

Wing less than 12.00; occipital feathers short and blended. Mantle bluish gray; the tail chiefly white; inner webs of quills largely white. (*Ridgway*.)

Sterna forsteri NUTT.

FORSTER'S TERN.

PLATE II.

Summer resident; rare; in migration, common. Arrive from the middle of April to first of May. Begin to return the last of August.

B. 686, 690. R. 685. C. 798. G. 313, 11. U. 69.

HABITAT. North America generally, breeding from Manitoba southward to Virginia, Texas and California; in winter, southward to Brazil.

SP. CHAR. "*Adult, in summer*: Pileum and nape deep black; upper parts, including rump and tail, light pearl gray, the primaries and tail paler and more silvery, the inner webs of the outer pair of rectrices usually darker (sometimes quite dusky) for that portion beyond the tip of the next feather. Inner webs of primaries without any well-defined white space, except on two outer quills, but the edge usually more or less dusky. Tips of secondaries, anterior upper tail coverts, sides and upper part of head and neck, and entire lower parts, pure white. Bill dull waxy orange, the terminal third or more blackish, with the

tip usually paler; mouth orange; edges of eyelids black; iris dark brown; legs and feet very fine orange red, the claws black. *Adult, in winter:* Similar, but the head and neck white, the occiput and nape more or less tinged with grayish, the sides of the head marked by a broad space of black surrounding the eyes and extending back over the auriculars. Tail less deeply forked than in summer, the outer rectrices broader and less elongated. *Young, first plumage:* Similar to the winter plumage, but the pileum, nape, back scapulars, tertials and wing coverts overlaid by a wash of raw-umber brown, chiefly on the ends of the feathers, but appearing nearly uniform on the back and crown; sides of the breast tinged with the same. Rectrices all distinctly dusky terminally, especially on inner webs (the outer web of the lateral feather hoary white to the tip), the middle feathers tipped with raw umber. Bill dusky, more brownish on basal portion of the mandible; legs and feet light brown in the dried skin. *Downy young:* Prevailing color light brownish buff, the breast and abdomen white; lower surface entirely immaculate, but upper parts coarsely and irregularly marbled with black, the sides of the head with a few scattered irregular minute markings of the same. Length about 3.50 inches, the culmen .35 of an inch."

	Length.	Stretch of w.ing.	Wing.	Tail.	Tarsus.	Bill.
Male	17.50	31.50	10.25	8.00	.90	1.60
Female . . .	15.25	30.00	9.75	6.50	.90	1.50

This species, with their slender bodies and long, pointed wings (like all of the family), sail through the air as lightly as a kite, and rest as buoyantly as a feather upon the water. Delicate, attractive birds in any position, and especially so while feeding upon the wing, coursing with easy, varied motions over the water, with their bills pointed downward at a right angle with the body; scanning closely every object beneath, and picking up here and there a tiny fish, a floating insect, or any choice morsel at or near the surface; never plunging beneath the surface, but dropping swiftly upon the water, or lightly swooping down and picking up as they go; sometimes patting the water with their feet.

They breed in communities and are largely gregarious throughout the year, collecting in numbers at eve and resting during the night on the sandy beach of an island or point of land extending well out into the water.

The birds are quite common upon both coasts, as well as in the interior, but are not usually so reported, as they are generally taken by the casual observer for *Sterna hirundo*, which they so closely resemble.

I found them during the winter months very abundant on the southwest coast of Mexico and at La Paz; and breeding in numbers on the small islands in Nueces Bay, Texas, as early as the first of April. The birds at such times are very noisy, and, as their nesting places are approached, their hoarse notes as they circle close overhead are almost deafening. Nest, a hollow, worked out in the sand, and broken shells, and lined with grasses. Eggs, three; said to average 1.78×1.33 ; but two sets collected April 12th, 1881, at Nueces Bay, only average 1.61×1.20 . Ground color from pale bluish green to olive buff, with faint shell markings of lilac, and rather evenly and coarsely spotted with different shades of brown; in form, ovate to short ovate.

Sterna hirundo LINN.

COMMON TERN.

PLATE II.

Migratory; very rare. Arrive from the middle of April to first of May; returning as early as the first of September.

B. 689. R. 686. C. 797. G. 314, 12. U. 70.

HABITAT. Chiefly eastern temperate North America, and various parts of the eastern hemisphere; breeding irregularly throughout its range.

SP. CHAR. "*Adult, in summer:* Pileum and nape, including upper half of the lores, uniform deep black. Upper parts deep pearl gray (much the same shade as in *paradisæa*), the border of the wings, tips of secondaries, lower part of rump, upper tail coverts and greater portion of the tail pure white. Lower parts pale pearl gray or grayish white (much lighter than the upper parts), becoming gradually white on the under part and sides of the head, and pure white on the crissum. Outer web of lateral tail feather ash gray, darker terminally, in abrupt contrast with the pure white of the inner web; outer webs of remaining rectrices, except the intermediæ, paler grayish. Outer web of outer primary blackish slate; outer surface of other primaries light silver gray, slightly paler than the back; inner webs chiefly white, with a stripe of grayish next the shaft, this stripe abruptly defined on the first five quills, but growing gradually broader and paler toward the fifth, and extending, near the end of the feathers, a greater or less distance toward the base, but the edge itself narrowly white; five inner quills pale silvery gray, the inner webs edged with white. Bill bright vermilion, blackish terminally, except on the tomia; inside of the mouth orange vermilion; edges of eyelids black; iris very dark brown; legs and feet orange vermilion, lighter than the bill; claws black. *Adult, in winter:* Similar, but forehead, crown and anterior parts of lores white, the vertex mixed with black,

entire lower parts pure white. *Young, first plumage:* Orbital region, occiput and nape dull black; crown mixed black and grayish white; forehead and lores, with entire lower parts, upper tail coverts, inner webs of rectrices, and tips of secondaries, white. Upper parts pale bluish gray, the scapulars, interscapulars and tertials tipped with pale buff, and marked with an indistinct subterminal lunule of dusky brown; anterior lesser wing coverts dusky, forming a broad bar across the wing; primaries much as in the adult, but darker; wing coverts paler than the back, and bordered indistinctly with white. Outer webs of rectrices grayish, deepening on outer feathers into slate. Bill dusky brownish, the base of the mandible paler and more reddish; feet pale yellowish (in the dried skin)."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	15.00	31.50	10.75	6.20	.75	1.40
Female . . .	12.75	30.00	9.75	4.50	.75	1.30

The birds are abundant on the Atlantic coast, decreasing in numbers west, and, I think, rare and exceptional on the Pacific coast; at least Dr. Cooper has never met with them there, and I failed, during the three winters that I collected along the coast and inland, to find a single specimen; and I am inclined to think writers that report them common there have taken *S. forsteri* for this species.

The birds have been found breeding from the south coast of Florida to the Arctic circle. I have found them breeding in small flocks on the lakes in Wisconsin, and in large numbers on several of the Magdalen Isles, Gulf of St. Lawrence. Their nests are said by some writers to be made of seaweeds and grasses, but all that I have examined were without material of any kind, the eggs lying upon the bare ground in a slight depression in the sand. Eggs three or four. One set of three eggs, collected May 27th, 1881, on Pewaukee Lake, Wisconsin, measure: 1.56x1.19, 1.60x1.20, 1.60x1.20; and a set of four, taken July 8th, 1880, at Byron Isle, one of the Magdalen group: 1.60x1.20, 1.60x1.22, 1.62x1.20, 1.66x1.18. Color pale bluish to greenish drab, thickly and rather evenly spotted and blotched with varying shades of light to dark brown, with shell markings of pale lilac; in form, ovate.

SUBGENUS STERNULA BOIE.

Wings less than 7.00. Tail about half as long as wing, forked for about half its length. (*Ridgway.*)

Sterna antillarum (LESS.).

LEAST TERN.

PLATE II.

Summer resident; rare. Arrive the last of April to first of May; return in August.

B. 694. R. 690. C. 801. G. 315. 13. U. 74.

HABITAT. North America, northward to California and New England, and casually to Labrador; breeding nearly throughout its range; south in winter, on both coasts, into northern South America.

SP. CHAR. "Smallest of the Terns (wing less than seven inches). *Adult, in summer:* Pileum and nape deep black, the forehead covered by a broad lunule of white extending back laterally to the eyes, the lores being crossed by a black line or narrow stripe extending from the eye to the lateral base of the maxilla, immediately behind the nostril. Entire upper parts, including lower part of the nape, upper tail coverts, and tail, pale pearl gray, deepest on the dorsal region and wings. Two to three outer primaries dusky slate, the inner webs broadly edged with white; remaining quills pearl gray, like the coverts, the edge of the inner webs white. Entire lower parts pure white. Bill bright yellow, usually (but not always) tipped with black; iris dark brown; legs and feet bright orange yellow. *Adult, in winter:* Similar, but lores, forehead and crown grayish white (purer white anteriorly), an occipital crescent, and a stripe forward from this to and surrounding the eye blackish. Bill dusky; legs and feet dull yellowish. *Young, first plumage:* Somewhat similar to the winter plumage, but humeral region marked by a wide space of dusky slate, the scapulars and interseapulars with submarginal V or U-shaped marks of dusky, the crown streaked and the occiput mottled with dusky, and the primaries darker than in the adult. Bill dusky, brownish toward the base; feet brownish. *Downy young:* Above, grayish white, finely mottled with dusky grayish, the head distinctly marked with irregular dots of dusky black; lower parts entirely immaculate white. Bill dull yellow, tipped with dusky; legs and feet clear pale yellow."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male.....	9.00	19.75	6.70	3.40	.60	1.08
Female...	8.75	19.25	6.60	3.25	.60	1.08

These little beauties, the smallest of the family, flit through the air like swallows, darting here and there for an insect, or suddenly stopping to hover, like Hawks or Kingfishers, over a school of minnows or shrimp, ready to drop upon the first that comes to the surface.

The birds, as a rule, are not timid, and take little or no heed of the approach of an intruder.

Audubon found them breeding in Labrador, but I think they are rarely to be met with north of latitude 45° . On my northern cruise I failed to find the birds north of Brier Island, Nova Scotia, and only noticed a single pair there. They are abundant south, along the coast of Florida, and I have often met with them on the coast of Lower California, and at San Diego; and have found them breeding on the Gulf coast, the salt plains of the Indian Territory, and a few on the Cimarron River, in Kansas. Their nest is a mere depression or place worked out to fit the body in the sand, on the islands and banks of the streams. Eggs two to four—rarely ever more than three— $1.15 \times .90$; buff to cream white, speckled and spotted, in some cases blotched about the larger end with brown umber and lilac; in form, rather oval to ovate.

GENUS **HYDROCHELIDON** BOIE.

“Similar to the smaller species of *Sterna*, but tail only very slightly forked or emarginate, the rectrices not attenuated at ends, and the webs of the toes filling less than half the interdigital spaces. Adults gray or blackish beneath, as dark as or darker than the color of the upper surface.”

Hydrochelidon nigra surinamensis (GMEL.).

BLACK TERN.

PLATE II.

Summer resident; rare; in migration, common. Arrive the last of April to first of May; beginning to lay about the middle of May.

B. 695. R. 693. C. 806. G. 316, 14. U. 77.

HABITAT. Temperate North America, south in winter to middle South America; breeding from the middle United States northward.

SP. CHAR. “*Adult, in summer:* Head, neck and lower parts sooty black, the head and neck, especially above, nearly pure black; anal region and crissum pure white. Entire upper parts uniform plumbeous, the border of the wing, from the shoulders to the carpo-metacarpal joint, white. Lining of the wing light plumbeous gray. Bill deep black, the rictus lake red, the interior of the mouth pinkish; iris dark brown; legs and feet purplish dusky. *Adult, in winter:* Head, neck and lower parts pure white; orbital and auricular regions dusky; crown and occiput dark grayish, the feathers bordered with paler. Upper parts as in the summer plumage, but rather paler plumbeous. *Young, first plumage:* Very similar to the winter plumage, but scapulars, intercapulars, and

terials tipped with raw-umber brown, the anterior lesser wing coverts dusky, the crown, occiput and upper part of the nape dusky, and the entire sides washed with plumbeous. *Downy young:* Above, deep soft-umber brown, with a few coarse irregular marblings of black; forehead, crown, throat and jugulum more sooty brown, without markings; side of the head, (including lores) dull whitish; abdomen white centrally, pale sooty grayish exteriorly."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.00	23.70	8.10	3.40	.62	1.10
Female	9.80	23.25	8.00	3.30	.62	1.00

This species in its manner of flight is much like the Least Tern, but more easy and graceful in its motions, often skimming for hours over the surface of the water, upon which it rarely alights.

In the stomachs of those examined, I found chiefly dragon flies, beetles and grasshoppers, with now and then the remains of little fishes.

I have met with the birds upon both coasts, but their natural home is inland, along the streams and about the marshes and reedy ponds. Nest on low, wet or marshy ground, bordering ponds and sloughs; made of bits of stems of reeds and grasses, and lined with the leaves and finer stems. . In some cases the eggs are laid upon the bare ground. Eggs usually three, occasionally four, 1.30 x .96; greenish drab to olive brown, spotted and blotched with brownish black, often thickest and running together around larger end; in form, rather ovate to pyriform.

ORDER STEGANOPODES.

TOTIPALMATE SWIMMERS.

"Hind toe lengthened and incumbered, and united to the inner toe by a complete web (small only in *Fregatidæ*). Bill extremely variable, but usually with a more or less extensible naked gular sac between the mandibular rami. Nostrils obsolete. Habits altricial; young dasypædic in *Tachypetidæ*, *Phalacrocoracidæ*, *Anhingidæ* and *Phaethontidæ*, gymnopædic in *Pelecanidæ* and *Sulidæ*. Palate saurognathous. Carotids double."

FAMILY ANHINGIDÆ. DARTERS.

"Bill slender, pointed, compressed, and very Heron-like in shape, the culmen and commissure almost straight, the gonys slightly ascending; terminal half of the tomia serrated, the serrations directed backward and forming a series of



PLATE III.

1. ANHINGA; Male. 2. Female. 3. DOUBLE-CRESTED CORMORANT; Female. 4. MEXICAN CORMORANT; Male. 5. AMERICAN WHITE PELICAN, Female. 6. MAN-O-WAR BIRD; Male.

close-set, sharp-pointed, fine bristly teeth; nostrils obliterated. Head small, neck slender and greatly elongated (nearly as long as the wing); outer toe about as long as the middle, or slightly shorter. Tail very long, fan shaped, rounded, the feathers widened toward the ends, the outer webs of the intermediae, in fully adult birds, transversely corrugated or 'fluted.'

"This singular family consists of but one genus, *Anhinga*, which has a representative in the warmer parts of each of the great divisions of the earth."

GENUS **ANHINGA** BRISSON.

"Characters the same as those of the family."

Anhinga anhinga (LINN.).

ANHINGA.

PLATE III.

A rare summer visitant.

B. 628. R. 649. C. 760. G. 306, 15. U. 1, 18.

HABITAT. Tropical and subtropical America, north to South Carolina, southern Kansas and western Mexico.

SP. CHAR. "*Adult male, in full breeding plumage*: Plumage of the neck and body deep glossy black, with a faint greenish gloss; scapular and lesser wing coverts marked centrally (longitudinally) with light hoary ash, these markings elliptical on the upper part of the scapular region, linear or nearly acicular on the longer scapulars, and broadly ovate on the wing coverts; exposed surface of the middle and greater wing coverts light hoary ash; remainder of the wings, with the tail, deep black, the latter less glossy, and broadly tipped with pale brown, passing into dirty whitish terminally. Sides of the occiput and neck ornamented by lengthened, loose-webbed, hair-like feathers of dirty white or pale grayish lilac; nuchal feathers elongated, hair-like, forming a sort of loose mane. Upper mandible dusky olive, the edges yellow; lower mandible bright yellow, the edges and tip greenish; bare space about the eye bluish green; gular sac bright orange; iris bright carmine; tarsi and toes anteriorly dusky olive, the hind parts and webs yellow; claws brownish black. *Adult male, in winter*: Similar to the above, but destitute of the whitish feathers of the head and neck. *Adult female, in full breeding plumage*: Head, neck and breast grayish buff, becoming grayish brown (sometimes quite dusky) on the pileum and nape, the breast lighter, and bounded below by a narrow band of dark chestnut, bordering the upper edge of the back of the abdomen; sides of the upper part of the neck adorned with an inconspicuous longitudinal stripe of short white, loose-webbed feathers. Rest of the plumage as in the male. Bill, etc., colored much as in the male, but iris paler red (pinkish). *Young, in first winter*: Similar to the adult female, but lower parts duller black (the feathers usually indistinctly tipped with grayish brown), the chestnut pectoral band entirely absent; upper parts much duller black (the back decidedly brownish), the light markings much smaller and more indistinct. *Young, first plumage*: Similar to the above, but entire lower parts light grayish buff, darker posteri-

only. Transverse corrugations of the middle rectrices quite obsolete. *Nestling:* Covered with buff-colored down."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	36.00	46.25	14.00	11.00	1.40	3.25
Female	35.00	44.30	13.25	10.65	1.40	3.00

This species was captured within the State, in the Solomon valley, in August, 1881, by Mr. C. W. Smith, of Stockton; and May 1st, 1888, Mr. Daniel Lambert, of Wilburn, Ford county, shot, in the northern part of Meade county, on Crooked Creek, five of the birds, out of a small flock that arrived a few days before and together. There is quite a thick grove of trees along the creek in that vicinity, and if they had not been disturbed it is possible they might have nested there, and it may have been their occasional breeding ground before the settlement of the county.

The first time that I met with the birds was at the mouth of the San Jacinto River and on Buffalo Bayou, Texas, during the last of March and the first of April. I was too early for their eggs, but before I left they had commenced building their nests in the trees.

The birds are more or less gregarious, roosting in small flocks at night in the tree tops, and during the day when at rest are to be seen perched upon an old stub or the lower branches of trees over the water. I found them very shy, and ever upon the alert, darting from their perch at the sight of an intruder, and disappearing beneath the water without scarcely leaving a ripple upon its surface, coming up hundreds of yards away, and, if badly frightened, only thrusting the bill out far enough to take in a supply of air; and if the water is not perfectly smooth it is useless to look for them.

Its food is chiefly fish, which it catches beneath the water, where it flies with the aid of its feet as swiftly as in the air; rarely ever at such times coming above the surface with more than the head and neck, which is so long, slim and wavy in motions, that it is oftener taken for a snake than a bird. When not fishing or apprehensive of danger, they ride up lightly upon the water. I have since met with the birds all along the Gulf

coast, and on the lagoons and up the rivers that I visited in Central America.

The nests of the birds are placed on bushes and branches of trees overhanging the water, varying in height from four to thirty feet; they are quite bulky and made of sticks, and lined with leaves, rootlets, moss, etc. Eggs two to four, 2.12x1.34; pale bluish green, with more or less of a white calcareous covering; in form, ovate. A set of two eggs, taken April 28th, 1882, at the mouth of the Gaudaloupe River, Texas, from a nest made of sticks and green twigs in leaf, in a willow tree, eleven feet from the ground, are, in dimensions, 2.20x1.66, 2.10x1.34.

FAMILY **PHALACROCORACIDÆ**. CORMORANTS.

"Bill small (shorter than the middle toe), variable in outline, but the maxillary unguis always prominent and strongly hooked; nostrils obliterated; lores, orbital region, lower jaw, chin and upper part of throat naked; middle toe longer than, or about equal to, the tarsus, the outer toe much longer, and the inner about as much shorter. Wings rather short, concave, reaching but little beyond the base of the tail; tail variable as to length, usually rounded or graduated, the feathers stiff, with very rigid shafts, which are exposed almost to the base of the tail, on account of the much abbreviated coverts. Plumage very compact; usually dark colored and glossy."

GENUS **PHALACROCORAX** BRISSON.

"Characters the same as those of the family."

SUBGENUS **PHALACROCORAX**.

Bill stout, with decidedly curved upper outline, the middle portion of the culmen being appreciably concave, the terminal nail, or unguis, more or less arched, strongly hooked, and occupying one-third or more of the entire length of the upper mandible, measured to the base of the culmen. (*Ridgway*.)

Phalacrocorax dilophus (Sw. & Rich.).

DOUBLE-CRESTED CORMORANT.

PLATE III.

Migratory; not uncommon. Arrive the last of March to first of April. To be looked for in the old, deep channels of the rivers in the low timbered lands. Return in October.

B. 623. R. 643. C. 751. G. 304, 16. U. 120.

HABITAT. Northern North America; south in winter to the Gulf coast; breeding from the Bay of Fundy northward, and westward to Manitoba.

SP. CHAR. "Basal outline of the gular pouch extending straight across the throat or projecting slightly back along the median line. *Adult, in full breeding plumage:* Head, neck, rump and entire lower parts glossy black, with a faint luster of dull bluish green; back, scapulars and wings dull grayish brown, each feather conspicuously and broadly bordered with black; tail uniform dull black. A tuft of narrow, lengthened, curved feathers on each side the crown, springing from behind and above the eye; these feathers are wholly black. Maxilla black, mottled with grayish or dull yellowish along the sides; mandible yellowish or pale bluish, mottled with dusky; loreal region and gular sac deep orange; eyelids and whole interior of the mouth bright cobalt blue, the former sometimes dotted with white; iris bright grass green; legs and feet deep black. *Adult, in winter:* Similar to the above, but tufts of the head wanting, and the bare skin of the lores, gular pouch, etc., deep yellow instead of orange, and the blue of the mouth and eyelids absent. *Young, first plumage:* Head and neck grayish brown, lighter next to the gular sac, darker on the crown and nape; back, scapulars and wings dull brownish gray, the feathers bordered with dusky brown; rump dusky brown; primaries and tail dull grayish black; lower parts light fawn color, darker on the sides, anal region and crissum. Bill dull brownish yellow, nearly black on the culmen; gular sac deep chrome yellow; iris greenish gray; legs and feet deep black. *Young, in winter:* Similar to the above, but throat, jugulum and breast paler, sometimes quite white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	33.00	52.00	13.00	7.00	2.20	2.30
Female . . .	31.00	50.50	12.25	6.25	2.20	2.20

The birds are abundant on the northeast coast, decreasing in numbers westward to the Rocky Mountains. They have been reported west of the Rockies, and breeding there, but the specimens taken on the Pacific side prove to be an intermediate race between this species and *albociliatus*.

The birds subsist chiefly upon fish, which they capture by diving and pursuing beneath the water, with a speed the swiftest of the finny tribe seldom escape, coming to the surface with their capture, tossing the same in the air and catching it head first as it falls, so that the fins will not prevent its passing into the stomach. The throat readily expands and enables them to swallow fish larger than the neck in its normal condition. I have often noticed the birds when resting upon a log, or perched upon a limb over the water, suddenly drop and disappear beneath its surface at the sight of a fish, catching it, however, in a fair chase, and not, like the Gannet or Kingfisher, by a plunge upon their prey.

All the birds of this family are voracious eaters, and the craving for food makes them active hunters, and they are successfully used in many places by the fishermen, who tie a string around their neck to prevent their swallowing the fish they catch. The Chinese especially rear and train the birds upon their boats for fishing, with great success. Le Comte says: "To this end they are educated as men rear up spaniels or hawks, and one man can easily manage a hundred. The fisher carries them out into the lake, perched on the gunnel of the boat, where they continue tranquil, and expecting his order with patience. When arrived at the proper place, at the first signal given each flies a different way to fulfill the task assigned it. It is very pleasant on this occasion to behold with what sagacity they portion out the lake or the canal where they are upon duty. They hunt about, they plunge, they rise an hundred times to the surface, until they have at last found their prey. They then seize it with their beak by the middle, and carry it without fail to their master. When the fish is too large they then give each other mutual assistance—one seizes it by the head, the other by the tail, and in this manner carry it to the boat together. There the boatman stretches out one of his long oars, on which they perch, and being delivered of their burden, they fly off to pursue their sport. When they are wearied he lets them rest for a while; but they are never fed till their work is over. In this manner they supply a very plentiful table; but still their natural gluttony cannot be reclaimed even by education. They have always, while they fish, the same string fastened around their throats to prevent them from devouring their prey, as otherwise they would at once satiate themselves and discontinue the pursuit the moment they had filled their bellies."

The birds breed in communities, and where the ground or rocks will admit, their nests are placed close together. On the last of July, 1880, I found the birds breeding in the Gulf of St. Lawrence, on the sides of the cliffs on Bonaventure Isle, and on the top of Perce Rock. The latter cannot be climbed, and nearly all the nests upon the isle were beyond reach; those examined, however, had young birds from half to nearly full

grown, and hundreds of little fellows could be seen either upon their nests or standing near by upon the rock.

The birds are very filthy, and the stench about their breeding grounds sickening. Their nests are made of sticks, moss from the rocks, and seaweed. Eggs three or four, 2.50x1.56; pale bluish green, coated with a white chalky substance, but more or less stained in their dirty nests; in form, elongate ovate.

Phalacrocorax mexicanus (BRANDT).

MEXICAN CORMORANT.

PLATE III.

A rare visitant; a single specimen taken four miles south of Lawrence, April 2d, 1872, by Mr. George D. Allen, and reported by Prof. F. H. Snow.

B. 625. R. 644. C. 754. G. 305, 17. U. 121.

HABITAT. Central America to southern United States; north in the interior to Kansas and southern Illinois.

SP. CHAR. "Smallest American species of the genus. Tail feathers, .12. Bill moderately robust, the unguis arched and strongly hooked, the culmen slightly concave in the middle portion, and gently ascending basally. Bare skin of the face extending farthest back on the side of the head, forming quite an angle behind the rictus; feathers of the throat advancing forward to a little anterior to the rictus, the middle portion sometimes slightly indented by an obtuse angle of the naked skin of the gular sac. Scapulars and wing coverts rather narrow and tapering, and nearly or quite pointed. *Adult, (in full breeding plumage?)*: Gular sac bordered posteriorly by a line of white reaching upward nearly or quite to the eye. Head, neck, rump and entire lower parts deep silky brownish black, with a very faint purplish-brown gloss in some lights; back, scapulars and wings dark brownish slaty, each feather narrowly bordered with black; primaries slate black; tail uniform deep dull black, the shafts black. Superciliary regions, sides of the neck and anal regions ornamented by a few short and narrow white filamentous feathers. Bill light colored (in skin), mottled with darker, the culmen dusky; gular sac brownish (orange red in life?); iris green; legs and feet deep black. *Adult, in winter*: Similar to the above, but without the white filaments. *Young, first plumage*: Head, neck and lower parts grayish umber brown, becoming gradually darker, or nearly black, on the nape, sides, flanks, anal region and crissum, and whitish on upper part of throat, next the gular pouch. Upper parts as in the adult. Iris green; bill dark fleshy, culmen and upper part of lower mandible dusky; gular sac brownish; feet deep black. *Young, in winter*: Similar to the above,

but throat, foreneck, jugulum and breast much lighter colored, sometimes almost white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	28.50	42.50	10.40	7.25	1.80	1.90
Female . . .	36.50	41.00	10.00	6.50	1.75	1.80

I have three of the birds in the Goss Ornithological Collection, taken in the early spring of 1881, at the mouth of the Nueces River, Texas. They appeared to be quite common, were mating, and, from actions, without doubt upon their breeding grounds. I also noticed a few of the birds in the winter of 1886, on the Chocon River, Guatemala, but cannot recall (with certainty) meeting with them elsewhere in Central America. In habits the birds are similar to the Double-crested.

Their nests are rudely constructed of sticks, leaves, etc., and placed on bushes or trees, over or near the water. A set of two eggs, taken the latter part of May, 1883, from a tree on the banks of the Colorado River (near its mouth), Texas, are, in dimensions, 1.72x1.24, 1.74x1.28; bluish white, with a slight chalky deposit; in form, elongate ovate.

FAMILY **PELECANIDÆ**. PELICANS.

"Bill greatly elongated and excessively depressed, the terminal unguis very prominent and strongly hooked; gular pouch exceedingly large and greatly distensible; lores and orbital region—sometimes other parts of the head also—naked. Toes fully webbed, the outer almost as long as the middle, the inner much shorter. Tail very short, nearly even or slightly rounded. Size usually very large."

GENUS **PELECANUS** LINNÆUS.

"Characters same as those of the family."

SUBGENUS **CYRTOPELICANUS** REICHENBACH.

Tail feathers, 24; lower jaw densely feathered; color white, with blackish remiges. (*Ridgway*.)

Pelecanus erythrorhynchos GMEL.

AMERICAN WHITE PELICAN.

PLATE III.

Migratory; quite common. Arrive the first of April to first of May; return early in September.

B. 615. R. 640. C. 748. G. 303. 18. U. 125.

HABITAT. Temperate North America; north in the interior to about latitude 61° , south in winter as far as Guatemala; rare along the Atlantic coast; common in the middle provinces, the Gulf coast, western Mexico and California.

SP. CHAR. "Tail feathers, 24. Malar region completely feathered; color chiefly white; bill, pouch and feet light yellowish or reddish. *Adult, in full breeding plumage:* Culmen with a narrow median horny excrescence, situated a little anterior to the middle of the culmen, the upper outlines more or less convex, the fibers vertical, the size and exact shape variable. Plumage white; sometimes tinged with pale pinkish, the narrow lesser wing coverts and jugular plumes straw yellow or (rarely) purplish buff; primaries dull black, their shafts white toward the base; secondaries dusky, edged both externally and internally with ashy white. Upper part of the nape with a pendent crest of long, narrow, silky, pure-white or pale straw-colored feathers. Bill chiefly orange, paler on the culmen, the nails and edges of the maxilla and mandible more reddish, mandible deeper red than the maxilla, growing almost brick red basally; pouch dirty whitish anteriorly, where suffused with blackish, passing successively through yellow and orange into intense dragon's blood or brick red at the base; lower edges of the mandible sometimes blackish, and side of the mandible sometimes marked, nearly opposite the maxillary crest, with a somewhat quadrate black spot; bare skin of the lores and orbital region rich orange yellow; eyelids dark reddish; iris pearl white; legs and feet intense orange red. *Adult, during the latter part of the breeding season:* Similar to the above, but maxillary excrescence wanting (having been cast), and the nuchal crest replaced by a patch of brownish gray. *Adult, in fall and winter:* Similar to the last, but no grayish patch on the occiput (crest also absent); the bill and feet clear yellow. *Young:* Similar to the winter adult, but lesser wing coverts brownish gray centrally, the pileum similarly marked; jugular feathers short and broad, and pure white, like the other feathers of the lower surface; bill, pouch and feet pale yellow.

"Individual variation, both in size and in the details of coloration, is very considerable in this species. Most descriptions of the perfect adult bird say that the plumage is tinged with peach-blossom pink; but in only a single example among the very large number examined by us (including both skins and freshly-killed birds) was the faintest trace of this color visible, and that confined to a few feathers of the back. The straw-yellow color of the narrow jugular feathers and lesser wing coverts, however, seems to be always a characteristic of the adult birds, both in winter and summer, though much paler in the former season. The black along the lower edge of the mandible and the squarish spot on its side are not infrequently entirely absent. The maxillary excrescence varies greatly, both in size and shape; frequently it consists of a single piece, nearly as high as long, its vertical outlines almost parallel and the upper outline quite regularly convex, the largest specimen seen being about three inches high by as many in length; more frequently, however, it is very irregular in shape, usually less elevated, and not infrequently with ragged anterior, or even posterior, continuations. This excrescence, which is assumed gradually in the spring, reaches its perfect development in the pairing season, and is dropped before or

soon after the young are hatched; simultaneously with the shedding of this appendage the nuchal crest falls off, and in its place a patch of short, brownish-gray feathers appears; this disappears with the fall moult, when the occiput is entirely unadorned, there being neither crest nor colored patch."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	65.00	104.00	24.00	7.25	5.00	14.75
Female	59.50	95.00	22.00	6.25	4.80	11.50

The birds are social in their habits, rarely quarrel, and are seldom to be seen alone, are very strong upon the wing, soaring for hours, often at an immense height. From their large size, remarkably long bill, and expansive pouch, they readily attract the attention of the most indifferent of observers; and it is an interesting sight to watch the birds upon their feeding grounds, as they unite to drive the fishes into shallow water, where they can catch them, which they cannot well do in deep water, as their skins are honeycombed with air cells that buoy them up like a cork and prevent their diving,* and they do not plunge for their food when upon the wing, like their cousins, the Brown Pelicans, and therefore have to adopt fishing habits suited to shallow water. I have often noticed the birds in flocks, in pairs, or alone, swimming on the water with partially opened wings, and head drawn down and back, the bill just clearing the water, ready to strike and gobble up the prey within their reach; when so fishing, if they ran into a shoal of minnows, they would stretch out their necks, drop their heads upon the water, and with open mouths and extended pouches scoop up the tiny fry. Their favorite time for fishing on the seashore is during the incoming tide, as with it come the small fishes to feed upon the insects caught in the rise and upon the low forms of life in the drift, as it washes shoreward, the larger fishes following in their wake—each, from the smallest to the largest, eagerly engaged in taking life in order to sustain life. All sea birds know this and the time of its coming well, and the White Pelicans that have been patiently waiting in line along the beach quietly move into the water, and glide smoothly out, so as not to frighten the life beneath, and, at a suitable distance

* The statement in *North American Birds*—*Water Birds*, Vol. II, page 137, that this species "dives with great celerity" is in error.

from the shore, form into line in accordance with the sinuosities of the beach, each facing shoreward and waiting their leader's signal to start. When this is given, all is commotion; the birds, rapidly striking the water with their wings, throw it high above them, and plunge their heads in and out, fairly making the water foam, as they move in an almost unbroken line, filling their pouches as they go. When satisfied with their catch, they wade and waddle into line again upon the beach, where they remain to rest, standing or sitting as suits them best, until they have leisurely swallowed the fishes in their nets; then, if undisturbed, they generally rise in a flock, and circle for a long time high in air.

Off the south coast of Florida (a coral formation) the shoal water often extends out for miles, and the tide is scarcely perceptible. There the birds have no occasion to dive, but gather their food by coursing, and in such places the Brown Pelicans, so expert in dropping upon their prey in deep water, are forced, in order to save their necks unbroken, to feed in like manner; this is especially noticeable in the shallow ponds in the Everglades. Several years ago, in the month of September, I had the pleasure of observing a small flock of the birds fishing in the Neosho River, Kansas. When, late at evening, they were forced by tired wings to stop in their southward flight, the place selected was in still, deep water at the head of a fall or rapids in the stream, where the water for some fifteen rods, and with a depth of about six inches, was rippling and dashing over the rocks, a natural feeding ground for the fishes. The birds after first bathing and dressing their feathers, giving particular attention to their primaries, without any unity of action, as hunger moved them, floated down over the rapids, picking up the fishes here and there, until the still water below was reached, when they would rise and fly back, to float down again, leisurely repeating this mode of fishing until it was quite dark.

The birds winter upon the seaboard in large numbers, seldom going south of the Gulf coast or the Gulf of California; breeding chiefly upon the islands in the large inland lakes, from Minnesota and California northward. They commence nesting on

the west side of the Rocky Mountains as early as the middle of April; upon this side about a month later. They breed in communities; their nests are a mere depression worked out in the sand; Eggs usually two; a set collected April 27th, 1875, upon an island in Malhuer Lake, Oregon, and presented to me by Capt. Chas. Bendire, measure: 3.40x2.28, 3.58x2.29; in color pure white (when not stained), with a rough, chalky shell; in form, oval to ovate.

FAMILY **FREGATIDÆ**. MAN-O'-WAR BIRDS.

"Bill longer than the head, thick, but broader than deep, the culmen gently concave, and the terminal ungui strongly decurved; nostrils obliterated; gular pouch naked, but rest of head scantily feathered except on top, where densely clothed; wings and tail excessively elongated, the latter deeply forked; tarsi excessively abbreviated, wholly concealed by feathers; toes weak and slender, the middle much longer than the outer, which again greatly exceeds the inner; middle claw with its inner edge flattened and pectinated; webs occupying less than half the space between the toes. A single genus only is known, which includes two closely allied species, or perhaps, more properly, geographical races. They inhabit the seacoasts of intertropical countries."

GENUS **FREGATA** CUVIER.

"Characters same as those of the family."

Fregata aquila (LINN.).

MAN-O'-WAR BIRD.

PLATE III.

A stragler. Mr. Frank Lewis, of Downs, Kansas, reports to me the capture of the bird, on the North Fork of the Solomon River, in Osborne county, August 16th, 1880. It was killed with a stone, while sitting on a tree. The specimen has passed out of his hands; but he sends me a photograph of the bird, taken after it was mounted.

B. 619. R. 639. C. 761. G.—, 19. U. 128.

HABITAT. Tropical and subtropical seas, chiefly north of the equator; north regularly to Florida, Texas and California, accidental to Nova Scotia, Ohio and Kansas.

SP. CHAR. "*Adult male*: Entirely black, the lanceolate feathers of the back and scapulars glossed with dull bottle green and reddish purple; bill light purplish blue, white in the middle, the curved tips dusky; inside of mouth carmine; gular sac orange; bare space above the eye purplish blue; iris deep

brown; feet light carmine above, orange beneath. *Adult female*: Dull black, the central area of the lesser wing covert region light grayish brown; back and scapulars only faintly glossed, the feathers not lanceolate; breast with a large white patch, extending downward along each side nearly or quite to the flanks, and upward on the sides of the jugulum (sometimes extending around the hind neck); iris dark brown; orbits and gular skin dark plumbeous, with a tinge of violaceous; feet carmine. *Young, (second year?)*: Upper parts as in the adult female; head, neck, breast and abdomen white; iris dull dark blue; bill horn color, darker at base; legs and feet pale pinkish blue. *Nestling*: Covered with a very fluffy white cottony down. The bare gular space, gular sac, legs and feet differ largely in color with age and season."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male.....	40.50	88.00	26.00	18.50	.80	4.75
Female...	39.00	86.00	24.00	18.00	.80	4.25

The birds are strictly maritime, and never wander far inland, unless bewildered or lost. Their power of flight is developed to the highest degree, enabling them to face the most violent of storms; and when the waves are rolling mountains high, and breaking upon the shoals and the beach with wild fury, and most of the water birds have fled to sheltered retreats, this species can be seen beating the wind and circling through it with the ease of the swallow when it is calm.

The birds are parasitical in their habits, and depend largely for their food upon the catch of the Boobies, Gulls and Terns, which they swoop down upon and harrass until they disgorge or drop their fish, catching the same without an apparent effort before it reaches the water; and I have seen them catch the flying fish, as they spring into the air to escape from the larger fishes that prey upon them within their own element. The birds course during the day in small flocks and alone, but at eve gather together in larger numbers at their roosts, in the mangrove bushes growing in or overhanging the water. They also nest in communities, and in similar situations, on the bushes and trees. Their nests are poorly constructed platforms of sticks loosely interwoven. The female lays one egg, 2.75x1.86; in color, white or pale greenish white, with a thick, smooth shell; in form, ovate to elongate ovate.



PLATE IV.

AMERICAN MERGANSER; Male. 2. Female. 3. RED-BREASTED MERGANSER; Male. 4. Female. 5. HOODED MERGANSER; Male. 6. Female. 7. MALLARD;
Male. 8. Female. 9. BLACK DUCK; Male. 10. MOTTLED DUCK; Female.

ORDER ANSERES.

LAMELLIROSTRAL SWIMMERS.

"Lamellirostral swimming birds, with straight bills, short legs (always shorter than the wing), the tibiæ usually completely feathered, and scarcely free from the body; hallux well developed, though usually small, never absent. Reproduction præcocial, and young ptilopædic; eggs numerous and unmarked, with a hard, usually very smooth, shell.

"Like the *Ondontoglossæ*, the order *Anseres* is composed of a single family, which, however, includes a very numerous genera and species. The order is represented in every portion of the globe, but most numerously in the northern hemispheres."

FAMILY **ANATIDÆ**. DUCKS, GEESE AND SWANS.

"Characters the same as those of the order."

SUBFAMILY **MERGINÆ**. MERGANSERS.

Neck shorter than the body. Tarsus shorter than middle toe with claw. Lower mandible without trace of lamellæ along the side, but with a series of distinct, tooth-like serrations along the upper edge. (*Ridgway*.)

GENUS **MERGANSER** BRISSON.

"Bill longer than the head, the breadth uniformly about equal to the depth, the serrations conical, acute, and pointed backward; crest occipital pointed, or scarcely developed and depressed. Tarsus nearly three-fourths the middle toe with claw. Tail about half the length of the wings. Bill mostly reddish."

Merganser americanus (CASS.).

AMERICAN MERGANSER.

PLATE IV.

Winter sojourner; quite common. Leave the last of February to middle of March. Return late in the fall.

B. 611. R. 636. C. 743. G. 300, 20. U. 129.

HABITAT. The whole of North America; breeding chiefly north of the United States, but occasionally in the mountain regions south to Arizona.

SP. CHAR. "*Adult male*: Head and upper half (or more) of the neck deep black, the elongated feathers of the pileum and nape distinctly, other portions faintly, glossed with greenish; whole back and inner scapulars deep black;

rump, upper tail coverts and tail plain cinereous; sides of the crissum (anteriorly) and femoral region whitish, narrowly barred with slate color; primary coverts, primaries and outer secondaries plain blackish dusky. Remainder of the plumage fine salmon buff in life, fading to buffy white in dried skins; inner secondaries narrowly skirted with black; base of the greater coverts deep black, forming a distinct bar about half way across the wing; anterior border of the wing dusky grayish or blackish. Bill deep vermilion red, the culmen and nail black; feet deep red; iris carmine. *Adult female*: Head and upper half of the neck reddish cinnamon, the pileum and occipital crest (the latter much longer than in the male) more brown, the lores grayish; chin, throat and malar region white; upper parts, sides and flanks bluish gray, the inner secondaries white, the exposed portion of the lower greater coverts white, tipped with dusky; outer secondaries, primary coverts and primaries uniform slate color. Lower parts, except laterally, pale creamy salmon color, fading to nearly white in dried specimens, the feathers of the jugulum ash gray beneath the surface. Bill, eyes and feet as in the male, but less brilliant in color. *Downy young*: Upper half of the head, with nape, reddish brown, more reddish on the nape where encroaching on the sides of the neck; remaining upper parts hair brown or grayish umber, relieved by four white spots, one on the posterior border of each wing and on each side of the rump; lower parts white; a stripe on the lower half of the lores, running back beneath the eye, white; below this a narrow stripe of deep brown, from the rictus back to the auricular region; a wide stripe, occupying the upper half of the lores, from the bill to the eye, blackish brown, this separated from the umber of the forehead by a very indistinct streak of brownish white or pale brown."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	26.00	37.50	10.80	4.75	1.75	2.10
Female . . .	24.00	34.50	9.60	4.25	1.65	2.00

These birds are common in the northern and middle portions of the continent; breeding on the inland lakes and streams usually north from the Gulf of St. Lawrence, and west to Alaska; in winter, south to the Gulf coast, southern California, and occasionally Mexico and Central America.

Early in the month of May, 1832, Nuttall found a mother bird, with a brood of eight little ones, on the Susquehanna river, near the gorge of the Alleghanies. Dr. C. Hart Merriam says: "In the Adirondack region, northeastern New York, the birds are a common summer resident, breeding on numerous lakes, very abundant in the fall." And I saw, on and near the head of the Pecos River, New Mexico, (latitude 35° 45', elevation 6,800 feet,) a female with four little chicks not over ten days old; and I am inclined to think the birds will prove to be quite

a common summer resident in the mountains within the United States. The birds seem to prefer for their feeding grounds the pools in the swift, shallow, rocky streams. They are expert divers, and subsist chiefly upon fish, and their flesh, like that of all this family, tastes rather rank and fishy.

The nests are placed in hollow trees and stubs; composed of leaves, moss and grasses, and lined with down from the birds.* Eggs usually eight to ten—as high as fourteen are said to have been found, 2.65x1.78; pale buff or buffy white; in form, oval to ovate.

***Merganser serrato* (LINN.).**

RED-BREASTED MERGANSER.

PLATE IV.

Winter visitant; rare.

B. 612. R. 637. C. 744. G. 301. 21. U. 130.

HABITAT. Northern portion of northern hemisphere; breeding from the northern United States to Greenland; south in winter throughout the United States.

SP. CHAR. "*Adult male*: Head dull greenish black, duller and more brownish on the forehead and throat, the crest faintly glossed with purplish; neck and sides of the jugulum pale fawn color or dull buff, indistinctly streaked with black, the streaks being on the edges of the feathers; a white collar around upper part of neck, just below the black. Lower parts pure creamy white, the sides and flanks undulated with narrow zigzag bars of black. Back and scapulars uniform black; shoulders overhung by a tuft of broad feathers, broadly margined with black, the central space being white. Anterior and outer lesser wing coverts dark slate gray, darker centrally; posterior lesser coverts and middle coverts wholly white; greater coverts with the terminal half white, the basal half black, partly exposed, thus forming a narrow band or bar across the wing; two inner tertials wholly black, the rest white, edged with black; inner secondaries entirely white; outer secondaries, primary coverts and primaries black. Rump and upper tail coverts dark ash gray, with black shafts centrally, finely mottled laterally with white and black zigzags. Tail slate gray, with black shafts. Bill deep carmine, the culmen black, the nail yellowish; iris carmine; feet bright red. *Adult female*: Head and neck cinnamon brown, duller and more grayish on the pileum and nape, the crest shorter than in the male; throat and lower parts white; the sides and flanks ash gray. Upper parts dark ash gray, the feathers with darker shafts; exposed portion of greater coverts and secondaries white, the base of the latter black, but seldom showing as a narrow bar; primaries black. Bill, eyes and feet as in the male, but less intense in color. *Young*: Similar to the adult female, but chin and throat pale reddish instead of pure

* All of the Duck family that line their nests with down pluck the same from their breasts, chiefly after they begin to sit.

white, the lower part of the neck and jugulum brownish white, with the feathers mouse gray beneath the surface; black at base of secondaries exposed, forming a narrow bar between two white areas. *Downy young*: Above, hair brown; the posterior border of each wing and a large spot on each side of the rump yellowish white; lower parts, including the malar region, yellowish white; side of head and neck reddish cinnamon, paler on the lores, which are bordered above by a dusky stripe running back to the anterior angle of the eye, and below by a dark brown, rather indistinct, rictal stripe; lower eyelid white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	23.50	33.50	9.25	4.00	1.85	2.40
Female . . .	21.50	31.50	8.75	3.50	1.80	2.20

The birds are found throughout the interior, but not as common as upon or near the seacoast. During the winter months I have seen a few of the birds at San Diego, and found them abundant in Puget Sound, also in the Bay of Fundy, and breeding on Grosse Isle, one of the Magdalen group, in the Gulf of St. Lawrence.

In their food habits similar to the Buff-breasted. Their nests are placed upon the ground, near the water, and usually in a thick growth of grass, composed of leaves, moss and grass, and lined with down and feathers. Eggs usually eight to ten, 2.56 x 1.77; cream drab, with an olive tinge; in form, ovate to elliptical ovate.

GENUS **LOPHODYTES** REICHENBACH.

"Bill shorter than the head, black; serrations compressed, low, short, inserted obliquely on the edge of the bill. Tail more than half as long as the wings. Tarsus about two-thirds as long as the longest toe with claw. Head with a full, semicircular, compressed crest of hair-like feathers."

Lophodytes cucullatus (LINN.).

HOODED MERGANSER.

PLATE IV.

Resident; rare; common in winter. Begin laying the last of April.

B. 613. R. 638. C. 745. G. 302, 22. U. 131.

HABITAT. North America in general, south to Mexico and Cuba, north to Alaska, accidental in Greenland, casual in Europe; breeding nearly throughout its range.

SP. CHAR. "*Adult male*: Head, neck, back and scapulars black; crest chiefly pure white, but bordered by a distinct 'rim' of black; forehead and feathers round the base of bill dark fuliginous, but this blending insensibly into the

deep black. Wing coverts dark gray, lighter and more ashy posteriorly; greater coverts broadly tipped with white, the base black, this exposed sufficiently to show a distinct band; inner secondaries with their exposed surface (inclosed wing) white, the basal portion black, showing narrowly beyond the end of the greater coverts; tertials with a central stripe of white. Primaries, primary coverts, rump, upper tail coverts and tail brownish dusky. Sides of the breast crossed by two black crescents, projecting from the black of the back, these interdigitating with two white ones, the last crescent being black. Sides and flanks rusty cinnamon (more grayish anteriorly), narrowly undulated with black; remaining lower parts white, the posterior part of the crissum mottled with grayish brown. Bill deep black; iris bright yellow; legs and feet yellowish brown, the claws dusky. *Adult female*: Head, neck, jugulum, and upper parts generally, grayish brown, darker above, the crest reddish hair brown or dull cinnamon, smaller and of looser texture than in the male; chin, upper part of the throat and lower parts, except sides and posterior part of the crissum, white; middle feathers of the greater wing coverts tipped with white; inner secondaries with their exposed surface white, except at the base. Maxilla black, edged with orange; mandible orange; iris hazel; feet dusky. *Young*: Similar to the adult female, but crest rudimentary or wanting, the sides and posterior part of the crissum more distinctly brown. *Downy young*: Above, deep hair brown, darkest on the back and rump; posterior border of the arm wing, a small spot on each side of the back (nearly concealed by the closed wing), and a larger one on each side of the rump, grayish white. Lower half of the head (from about on a line with the eye) brownish buff, paler on the chin and throat; jugulum light dingy brownish; remaining lower parts dingy white, the sides brown, like the upper parts."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	18.50	26.50	7.75	4.00	1.20	1.60
Female . . .	17.50	25.50	7.25	3.50	1.15	1.50

This handsome species is common inland upon the streams and ponds, but I have seldom met with it upon the salt water. The birds are swift in flight, graceful upon the water, and active divers. Their food consists of small fishes, crawfish, frogs, and all forms of insect life.

Their nests are placed in shallow holes and trough-like cavities in trees near the streams, and are lined with grasses, leaves, feathers and down. Soon after the young are hatched, the mother carries them by the neck or wing to a secluded retreat at the water's edge. Eggs six to ten, 2.10x1.72; pure ivory white, with a few neutral tints; in form, ovate to rounded ovate.

SUBFAMILY ANATINÆ. RIVER DUCKS.

Lower mandible with a very distinct series of lamellæ along the side, in addition to the series along upper edge. (*Ridgway*.)

GENUS **ANAS** LINNÆUS.

"Usually rather large-sized ducks, with the bill a little longer than the head or foot, rather broad, depressed, the edges parallel, the end rounded; speculum metallic green, blue, or violet, in both sexes, usually broader posteriorly by a black band; this generally succeeded by a white one."

Anas boschas LINN.

MALLARD.

PLATE IV.

Resident; rare; in migration, abundant; begin laying the last of April to first of May.

B. 576. R. 601. C. 707. G. 282. 23. U. 132.

HABITAT. Whole of northern hemisphere.

SP. CHAR. "*Adult male:* Head and neck continuous soft, brilliant metallic green, showing purple and golden bronze reflections in different lights; a ring of pure white round the lower part of the neck, interrupted on the nape; jugulum and upper part of the breast rich dark chestnut; interscapulars brownish gray, finely waved with grayish white; scapulars and lower parts grayish white, delicately waved with dark ash; outer webs of tertials dark umber brown, this also tinging the adjoining scapulars; wing coverts uniform deep brownish gray, the last row tipped with opaque velvety black, and with a subterminal bar of pure white; speculum rich metallic violet, with a subterminal velvety black, and terminal pure white bar; primaries plain brownish gray. Rump, upper tail coverts and crissum intense velvety black, showing faint reflections of bluish green. Tail white, the feathers grayish centrally. Two middle feathers black, slightly recurved; the two longer upper tail coverts greatly recurved. Bill olive yellow or ochraceous olive (in life), the nail black; iris hazel; tarsi and toes fine rich orange red (changing to yellowish in dried skin). *Adult female:* Wing as in the male. Above, brownish dusky, much variegated by broad, pale ochraceous edges to the feathers; beneath, pale ochraceous, the feathers dusky centrally, producing a thickly spotted or striped appearance. On the top of the head the dusky predominates, as it also does in a loreal and auricular line, forming a lighter superciliary stripe between this and the crown. *Downy young:* Above, deep olivaceous, relieved by two pairs of yellowish buff spots, the first pair on the back, just behind the wings, the second at the base of the tail, the first not confluent with the buff of the lower parts; wings deep olivaceous, varied on both edges with dull greenish yellow; pileum and nape olivaceous, darker on the occiput, lighter on the forehead; a broad superciliary stripe, including the sides of the forehead, sides of the head and neck and entire lower parts, yellowish buff, deepest on the head, paler on the anal region and crissum; sides more grayish, and crossed, between the wings and thighs, by two wide patches of dark olive, projecting from that of the back. Side of the head marked by a narrow but very distinct stripe of dark brown from the upper basal angle of the maxilla to the eye, thence back to the confluent with the olivaceous

of the occiput; beneath the latter, almost directly over the ear, an isolated spot of the same."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	23.75	38.25	11.40	4.25	1.70	2.20
Female . . .	21.50	36.00	10.60	3.75	1.60	2.10

The birds are widely distributed over the continent, breeding from the southern United States to Greenland, but chiefly northward. They are strictly fresh water birds, and abundant inland, preferring for their homes the grassy ponds and marshes, seldom frequenting the open waters of the larger lakes. In a wild state, occasionally cross with other species, but as a rule are monogamous, pairing each season. They are easily tamed, and in a domestic state become polygamous. In flight, they are swift and strong. Their food consists of snails, frogs, tadpoles, insects, aquatic plants, seeds, and grains of all kinds; they are also very fond of acorns, and upon our prairies during the fall and winter feed largely upon corn, entering the corn fields at eve and leaving at daylight.

Their nests are placed on the ground in the grass, at or near the edge of ponds or sloughs, constructed of grass, weeds and leaves loosely scraped or placed together, and lined with feathers and down. Eggs six to ten, 2.30x1.60; dull greenish white, or pale buffy green; in form, oval or ovate.

***Anas obscura* GMEL.**

BLACK DUCK.

PLATE IV.

Entered in first catalogue as "Migratory; rare;" but the supposed specimens captured in the State, that I have seen, prove to be the Mottled Duck. Other writers have reported them in Texas, and as far west as Utah. I therefore have retained the birds in the Revised Catalogue. Farther examination tends to convince me that the writers were mistaken in the birds, and that they do not come this far west. I have called the attention of ornithologists to the matter, in *The Auk*, Vol. 5, p. 444, and, until we have more light, will let the bird stand as first entered.

B. 577. R. 602. C. 708. G. 283. 24. U. 133.

HABITAT. Eastern North America; breeding from the more northern United States to Hudson's Bay and Labrador. (Western and southern limits imperfectly determined.)

SP. CHAR. "*Adult:* Prevailing color brownish black or dusky, the feathers edged more or less distinctly with pale grayish fulvous. Head and neck about equally streaked with grayish white (more ochraceous near the bill) and dusky; pileum nearly uniform dusky, and a dusky stripe back from the eye. Speculum violet, changing to green in some lights, narrowly tipped with white, and with a broad subterminal bar of velvety black; last row of coverts dusky brownish, broadly tipped with black. Sexes alike. Bill yellowish green, the unguis dusky; iris dark brown; feet orange red, the webs dusky. *Downy young:* Above olivaceous brown, faintly relieved by six inconspicuous markings of light brownish buff, situated as follows: One on the posterior border of each arm wing; one (small and sometimes obsolete) on each side of the back, behind the wings, and one, more distinct, on each side of the rump, near the base of the tail. Pileum and nape (longitudinally) brown, like the back; rest of the head and neck with lower parts light dingy brownish buff, paler on the abdomen; side of the head marked with a narrow dusky stripe, running from the upper basal angle of the maxilla to the eye, thence back toward the occiput, but scarcely confluent with the brown on the latter; an indistinct spot on the auricular region, with a still less distinct dusky mark extending back from this to the nape."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	24.00	37.50	11.25	4.25	1.75	2.20
Female . . .	22.00	36.00	10.50	4.10	1.75	2.05

The birds are very common on the Atlantic coast, decreasing in numbers westward. They appear to be as much at home on the salt water bays, marshes and inlets as upon the fresh waters.

Their food consists of shell fish, crustacea, frogs, and all forms of insect life, also aquatic plants and grains, but are not as much of a vegetable eater as the Mallard. Their flight is very rapid and usually direct.

They breed throughout their range, but chiefly northward. I found them breeding in Nova Scotia, on the islands in the Bay of Fundy, and upon the Magdalen Islands; at the latter, especially on Grosse Island, they were very abundant. Their nests are placed on the ground in grass or rushes, usually near the water. It is a large, compactly-arranged structure of weeds and grasses, slightly hollowed, and lined with feathers and down plucked from the breast of the bird. Eggs six to twelve, usually seven or eight, 2.33x1.75; ground color creamy white, to pale greenish buff; in form, nearly elliptical.

Anas fulvigula maculosa (SENN.).

MOTTLED DUCK.

PLATE IV.

Rare. Arrive about the middle of March.

B. —. R. —. C. —. G. —. —. U. 134a.

HABITAT. Texas (probably New Mexico), north to Kansas.

SP. CHAR. Top of head blackish brown, margined with very pale buff; chin and throat Isabella color; cheeks buffy white with narrow streaks of dark brown. Feathers of breast, wings, upper parts and flanks blackish brown margined with pale buff. Under parts buffy white, each feather with a broad, blackish-brown spot near the tip, giving a decided mottled appearance. Under tail coverts blackish, with outer margin of inner web reddish buff, that of outer web buffy white. The four median feathers of tail blackish brown; the others fuscous, margined with pale buff, having a V-shaped mark as in *A. fulvigula*, but of a buffy white. Under surface of all tail feathers light gray, excepting the four median, which are blackish brown. Lining of wing white. Speculum metallic purple, feathers tipped with white. Bill has small black spot on base of lower edge of upper mandible, as in *A. fulvigula*; feet reddish orange. Wing 10.05; culmen 2.25; tarsus 1.75; middle toe and claw, 1.50 inches. (Sennett.)

Female similar to the male, except that the black spot at the base of the upper mandible is much paler. (A specimen described by Mr. Sennett is wholly without marking.) Iris dark brown; webs pale dusky; claws blackish.

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	22.50	35.50	10.50	4.15	1.70	2.15
Female	21.00	34.00	10.00	4.00	1.65	2.10

In my Revised Catalogue I entered this bird as *Anas fulvigula*. In The Auk, Vol. 6, p. 263, Mr. Sennett described a new Duck from Texas as a species, viz., *Anas maculosa*, which I found upon examination to be the Kansas bird, instead of the Florida, as given. In the examination, however, I reached the conclusion that the difference existing between the two birds was not sufficient to warrant a specific separation, but rather a sub-specific one. I therefore, at the annual meeting of the A. O. U., in 1889, called the attention of the council to the same, and they by a unanimous vote sustained the conclusions reached, and named the bird *Anas fulvigula maculosa*, as now entered.

In habits the birds are more like the Mallard than the Black Duck, inasmuch as they are seldom found upon the open salt

waters, preferring the lagoons, shallow ponds and marshy pools of fresh water.

This bird is, without doubt, a summer resident within the State. Their nests are usually placed on marshy grounds, in the old, dead grass, and are lined with a few feathers and down. Eggs eight to ten. One set of eight, collected near Corpus Christi, Texas, May 27th, 1882, are in dimensions as follows: 2.08x1.62, 2.12x1.62, 2.10x1.58, 2.12x1.60, 2.12x1.59, 2.08x1.62, 2.10x1.60, 2.08x1.59; in color, cream or pale buff white; in form, oval to ovate.

SUBGENUS CHAULELASMUS BONAPARTE.

Culmen shorter than middle toe without claw. Distance from anterior border of nostril to tip of upper mandible more than three times the distance from same point to nearest loreal feathers; lamellæ numerous, fine, more than thirty being visible from outside; tail feathers sixteen. (*Ridgway.*)

Anas strepera LINN.

GADWELL.

PLATE V.

Summer resident; rare; in migration, common. Arrive the middle of March to first of April. Begin laying the last of May. Leave late in the fall.

B. 584. R. 604. C. 711. G. 284, 26. U. 135.

HABITAT. Northern hemisphere in general; south in winter to Central America; breeding in temperate regions.

SP. CHAR. "*Adult male, in fall, winter and spring:* Ground color of the head and neck pale brown, or brownish white, thickly speckled with black; on the pileum the brown deeper and more uniform, and the specks obsolete; on the occiput, when present, they incline to the form of transverse bars. Jugulum marked with greatly curved bars, or crescents, of white and black, the bars of the latter wider. Lateral portions of the body beneath, back and scapulars finely undulated, in curved transverse lines, with slate color and white. Many of the longer scapulars plain brownish gray, broadly edged with a lighter, more fulvous tint. Rump plain dull slate. Tail coverts, above and below, intense opaque velvety black. Tail cinereous, faintly edged with white. Middle rows of wing coverts bright chestnut, the anterior coverts brownish gray, and the posterior ones deep black; last row deep velvety black. Speculum immaculate pure white, the lower feathers cinereous (some with black on outer webs), narrowly tipped with white; tertials plain pale ash, the primaries a darker shade of the same. Bill bluish black; iris reddish hazel; feet dull orange yellow; claws brownish black; webs dusky. *Adult male, in summer:* Crown brownish



PLATE V.

1. GADWALL, Female; 2. BALDPATE, Male; 3. Female; 4. GREEN-WINGED TEAL; Male; 5. Female; 6. BLUE-WINGED TEAL, Male; 7. Female; 8. CINQUEDACTYLUS, Male; 9. Female; 10. SHOVELLER, Male; 11. Female; 12. PINTAIL, Male; 13. Female.

black, with a greenish tinge; an indistinct streak through the eye dark brown; rest of head and neck dull brownish white, marked with blackish brown, as in the previously-described bird (adult male, in spring); back, rump and upper tail coverts dark blackish brown, each feather margined with rusty red; wings and tail as in the bird above described; breast dull rusty red, each feather with a central black spot; flanks dark brown, broadly marked and margined with dull rufous; the rest of the under parts dull white, each feather having a central blackish brown drop-shaped mark. *Adult female*: Colors chiefly brownish dusky and brownish white, in longitudinal streaks on the head and neck, and in irregular transverse spots and bars on other portions. On the upper surface the dusky prevails, and on the lower parts the whitish predominates. Wing nearly as in the male, but the chestnut usually absent, the black less extended, and the gray of the coverts generally more or less barred and tipped with white. Abdomen and lower part of the breast pure white; throat finely streaked with dusky. *Downy young*: Covered with soft short down; head, nape, back and rump dark dull brown; on each side of the rump and back of each wing joint a sulphur yellow spot, the wing joints being marked with that color; forehead, space around the eye, throat and chest pale sulphur yellow; abdomen white, shaded with sulphur yellow, on the lower part sooty gray."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	20.00	35.50	10.50	3.75	1.60	1.75
Female . .	18.50	34.00	10.05	3.70	1.55	1.75

This species is not uncommon in the interior, especially throughout the Mississippi valley and westward. I have never met with the birds upon salt water, except in estuaries and along the edges of lagoons, nor far out upon the open fresh water; their natural resorts are along the banks of reedy streams or ponds, and upon marshy grounds.

The birds are rather solitary in their habits and are usually found in pairs or small flocks. When approached from the shore they do not attempt to hide, but boldly swim out into the open water and at once take wing, flying swiftly, making with their wings as they cleave the air a whistling sound like that of the Baldpate, but not so loud. The birds unless winged rarely attempt to escape by diving.

Their food is procured largely in shallow water, with head, neck, and anterior parts of the body immersed; it consists chiefly of insect life, snails, tadpoles, crawfish, bulbous roots, water cresses, tender blades of grass, and also cereals. I have occasionally started them from corn fields, but never far from the water's edge. They are easily domesticated, and their flesh

excellent. In the summer of 1885, I found young birds in a pond, in Meade county, Kansas.

Their nesting habits are the same as those of the Mallard; their eggs a little smaller and paler, usually eight to twelve. A set of four, taken May 27th, 1868, at Horicon Lake, Wisconsin, are, in dimensions, 2.20x1.50, 2.19x1.49, 2.21x1.50, 2.19x1.52; pale buff white; in form, oval to ovate.

SUBGENUS MARECA STEPHENS.

"Bill small, shorter than the head, rather narrow, the edges parallel to near the end, where they gradually converge to a rounded tip; culmen gently concave; lamellæ of the maxillæ almost concealed; feet small, the tarsus about as long as the bill; sexes very different in winter, much like in summer. Adult male, in winter, with the scapulars and tertials (in the North American species the tail coverts and rectrices also) lanceolate."

Anas americana GMEL.

BALDPATE.

PLATE V.

Summer resident; very rare; in migration, common. Arrive the middle of March to first of April; return in October.

B. 585. R. 607. C. 713. G. 286, 27. U. 137.

HABITAT. North America in general; breeding chiefly north of the United States; south in winter to Guatemala and Cuba.

SP. CHAR. "*Adult male, in winter:* Forehead and middle of crown (longitudinally) white, generally immaculate; ground color of head and neck white, sometimes more or less soiled with grayish or brown, and thickly speckled with black; a broad space of metallic blackish green on the side of the occiput, running forward to the eye, and sometimes down the nape, where the two spaces are confluent; jugulum plain pinkish vinaceous; sides and flanks the same, delicately undulated with black; lower tail coverts velvety black; rest of lower parts pure white; back and scapulars grayish white, more or less tinged with the color of the sides, and similarly undulated with black; wing coverts immaculate pure white, the anterior portion of the lesser covert region cinereous, and the last row tipped with velvety black; speculum soft metallic green anteriorly, velvety black posteriorly; tertials velvety black, sharply edged with white, the lower one with its lower edge entirely pure white; primaries plain dark cinereous; rump cinereous, minutely undulated on the edges of the feathers; upper tail coverts velvety black, the inner webs mostly grayish; tail hoary cinereous; bill light grayish blue, the end black; iris brown; legs and feet light bluish. *Adult female:* Above, dusky grayish brown, with transverse, rather distinct, bars of dull white or light ochraceous; wing coverts dark dull cinereous, broadly tipped and bordered with white; speculum dull black; head and neck streaked with

blackish upon a dull whitish ground, the former color prevailing on the nape and behind the eye; jugulum pale grayish vinaceous, the feathers darker beneath the surface; sides and flanks deeper vinaceous; lower tail coverts transversely spotted with brown; rest of lower parts pure white. *Young male*: Similar to the adult female, but the colors more pronounced and the pattern better defined, especially on the wing. *Downy young*: Above, dark olive, with a sepia tinge; a spot of pale greenish fulvous on the posterior half of the wing, one on each side of the back, and one on each side of the rump; lower parts, including head and neck, pale fulvous; a distinct blackish olive stripe from bill to and back from the eye, with a wide and continuous superciliary stripe of fulvous above it. The chief variation in the plumage of adult males of this species consists in the extent of the green patch and the amount of black spotting on the head, the pureness of the white on the forehead, and the extent of the white patch on the wing coverts. The green patch on the side of the occiput is usually poorly defined, and broken up by lighter spotting."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	21.00	34.25	10.00	5.50	1.55	1.50
Female . . .	19.00	32.50	9.75	4.50	1.50	1.40

In the winter of 1883 I saw a small flock of this species upon Amatitlan Lake, Guatemala, and since met with a few on the Culiacan River, Mexico; but the birds winter largely upon the southern borders of the United States. I have often met with them in quite large flocks along the Gulf coast and in southern California.

This species, like most of the shoal-water Ducks, are to be looked for along the edges of lagoons, grassy lakes and pools of water. The birds as a rule are not shy, and their note, a sort of whew, whew, whew, uttered while feeding and swimming, enables the hunter to locate them in the thickest growth of water plants; and when in the air the whistling noise made by their wings heralds their approach; and as they are good eating, will soon become very rare, if not wholly exterminated.

Their food and feeding habits, when thrown upon their own resources, are the same as the Gadwell; but in the fall often subsist largely upon aquatic plants growing deep in both salt and fresh water (the *Vallisneria* grass the favorite); but as they do not dive in order to procure the same, they closely follow and watch the Canvas-back and other deep-water Ducks that feed upon these roots and grasses, snatching their catch from their

bills the moment their heads appear above the water, and hurrying away to swallow at their leisure the food so cleverly stolen.

I have several times noticed the birds in Kansas during the summer months, and from the actions of a female that I saw June 26, 1884, at a pond near Wallace, I knew that she had young birds hidden in the thick, tall rushes growing in the center of the pond; and they may occasionally breed within their range, but their natural breeding grounds are in the northern portion of the United States, and northward to the Arctic Ocean.

Their nests are placed in a bunch of grass or under a bush, on dry ground, often quite a distance from the water; a mere depression lined with grasses, leaves and down. A set of six eggs, taken June, 1887, at Manitoba, measure: 2.04x1.45, 2.05x1.47, 2.02x1.45, 2.07x1.44, 2.02x1.43, 2.06x1.45; cream or buff white; in form, oval to ovate.

SUBGENUS NETTION KAUP.

"Bill shorter than the head, narrow, depressed (except at base), the edges parallel; tarsus shorter than the bill or middle toe; nape with a small mane-like tuft; rectrices more or less acuminate, the middle pair longest."

Anas carolinensis GMELIN.

GREEN-WINGED TEAL.

PLATE V.

Winter sojourner; rare; in migration, abundant. Leave in April; return in September.

B. 579. R. 612. C. 715. G. 290, 28. U. 139.

HABITAT. North America in general, breeding chiefly north of the United States; south in winter to Central America and Cuba.

SP. CHAR. "*Adult male:* Head and neck rich chestnut rufous, inclosing a broad patch of soft, dark metallic green on each side of the occiput, from the eye (which it surrounds) down the sides of the nape, where the two areas of the opposite sides touch a short nuchal crest of bluish black. The green patch bordered anteriorly and beneath by a yellowish white line, and a less distinct line of the same bordering the base of the upper mandible, extending thence back to, and indistinctly following for a short distance, the upper anterior portion of the green patch. Chin and upper part of the throat dull black. Front of the jugulum deep pinkish cream color, with roundish and transversely ovate spots of black. Collar around the lower neck, sides of the jugulum, sides and flanks very delicately and beautifully undulated with black upon a white ground;

outer scapulars similarly waved. Sides of the breast with a large transverse bar of plain white. Crissum rich deep cream color, bounded anteriorly, and divided medially, with velvety black; post-femoral region waved like the flanks; rest of lower parts plain white, sometimes tinged with cream color. Back, scapulars, rump, wing coverts, primaries and tail plain cinereous. Outer row of scapulars, with their outer webs, about half velvety black, bordered interiorly with a white line. Last row of coverts broadly tipped with deep ochraceous; speculum opaque black narrowly tipped with white, the four or five upper feathers with their outer webs richly brilliant soft metallic green, varying from golden to violaceous, according to the light. Bill black; iris brown; feet light fleshy (horn color when dried). *Adult female*: Wing as in the male, but duller. Above, cinereous dusky, variegated with edgings and transverse bars of ochraceous white. Ground color of the head, neck and lower parts dingy whitish, more or less tinged with ochraceous; head and neck speckled with dusky, the spots enlarged and aggregated on the pileum, so as to form the prevailing color, and also along the upper border of the ear coverts, producing a stripe from the eye back. Jugulum, sides and flanks more heavily spotted with dusky. Abdomen sometimes plain, but usually speckled. Bill brownish; iris brown; feet pale brown (fleshy in life). *Young male*: Similar to the adult female, but entire abdomen and sides immaculate white. *Downy young*: Above, grayish brown with a light grayish buff spot on each side of the back, and a similar pair on the rump; wings crossed near the ends by a light grayish buff bar. Head, neck and lower parts light dull buff; crown and occiput covered by an elongated patch of grayish brown (darker than the back), this scarcely reaching the forehead, but continued down the nape to the brown of the back; a dusky streak behind the eye, not reaching to the occiput; below the posterior end of this, an oblong spot of grayish brown."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	14.50	24.50	7.30	3.10	1.20	1.50
Female . . .	13.50	22.25	6.50	3.00	1.12	1.40

This handsome little Duck is usually found in small flocks along the edges of shallow, grassy waters, feeding largely upon seeds, aquatic plants and insect life; they fatten very fast in the rice fields, and are very fond of acorns; and, in their search for the same, I have started them quite a distance from the water. The birds walk with ease, and carry themselves as gracefully upon the land as upon the water. In exposed situations they feed largely in the night, resting during the day upon bogs or small bare spots, closely surrounded and hidden by reeds and grasses.

On the 23d of March, 1887, I met with a small flock near Orange Walk, on the Belize river, British Honduras, but they winter chiefly along the southern borders of the United States.

I have found them in numbers along the Gulf coast and in California. They breed from the northern United States to the Arctic circle; their nests are usually placed upon dry grounds, generally in tufts of grass, and often quite a distance from the water. They are made of grass, weeds, etc., and lined with down. Eggs usually eight to twelve, 1.78x1.28; pale buff; in form, oval.

According to Mr. Dall, the birds frequently lay sixteen to eighteen eggs; and Mr. Hearn says that this species is far more prolific than any of the Ducks resorting to Hudson's Bay, and he has seen the old ones swimming at the head of seventeen young, when the latter were not much larger than walnuts;* in July, 1880, I saw, at Grosse Isle, one of the Magdalen group, a female with ten little chicks.

SUBGENUS QUERQUEDULA STEPHENS.

"Bill slightly longer than the head, the edges nearly parallel, the maxillary tomium sinuated, so as to distinctly expose the lamellæ for the basal half, and the terminal half of the culmen slightly but distinctly arched. Otherwise much like *Nettion*."

Anas discors LINN.

BLUE-WINGED TEAL.

PLATE V.

Summer resident; not uncommon; in migration, abundant. Arrive the last of March to middle of April; begin laying the last of May; leave late in the fall.

B. 581. R. 609. C. 716. G. 288, 29. U. 140.

HABITAT. North America in general, but chiefly east of the Rocky Mountains; south in winter to the West Indies and northern South America; north to about latitude 60°.

SP. CHAR. "*Adult male*: Head and neck dull plumbeous, slightly glossed with lavender purple on the side of the occiput and nape, and marked in front of the eyes by a large, somewhat crescentic, patch of white, extending entirely across the anterior portion of the head; pileum, chin, and feathers bordering the white patches, blackish; lower parts pale reddish, thickly spotted with black, the crissum uniformly black. Back and anterior scapulars dusky, marked with concentric or U-shaped bars of pale reddish buff; lesser wing coverts and outer webs of some of the longer scapulars pale blue; middle coverts white for the exposed portion, forming a bar across the wing; speculum bronzy green, dusky terminally, with a very narrow white tip; tertials black, with a central stripe

*North American Water Birds, Vol. II, page 5.

of buff; a white patch at the base of the tail on each side; axillars immaculate pure white. Bill uniformly black; iris brown; feet yellowish. *Adult female:* Wings, only, as in the male; upper parts dusky, the feathers bordered with dull buff, the pileum and nape finely streaked; rest of head and neck, and lower parts generally, brownish white, the head and neck streaked with dusky, except on the chin and upper part of the throat, the streaks more dense immediately before and behind the eye, thus forming an indistinct stripe on the side of the head; feathers of the lower parts generally with dusky grayish brown centers, forming spots when exposed, less distinct on the abdomen, where sometimes obsolete."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	16.00	25.25	7.50	3.20	1.30	1.65
Female . . .	15.00	23.25	7.20	3.00	1.25	1.60

I have only met with this little fresh-water Duck once in California, but have found it quite common in other parts of the continent that I have visited; and during the summer months it is abundant throughout the Mississippi valley. The birds are very susceptible to cold, and leave for the south on the approach of frost.

They inhabit the sloughs, shallow pools, and the reedy edges of ponds and streams. Their food consists largely of insect life, roots and tender blades of water plants, and seeds; the wild rice a favorite. Their flesh is tender and esteemed very highly.

The birds are very swift in flight, and when under full headway it requires a quick eye and a snap shot to drop the one aimed at. In alighting, they circle well over the ground, to satisfy themselves that no enemy is near, but once down are not watchful; and as they crowd closely together while feeding, as well as at rest, they are easily trapped or slaughtered by the murderous shot gun in the hands of the pot hunter.

The birds occasionally breed throughout their range, but chiefly in the northern United States and southern British possessions. Their nests are placed on the ground in coarse grass, reeds or rushes bordering the prairie slough, and are composed of the same material and lined with down. Eggs eight to twelve, 1.86x1.34; cream or pale buff; in form, oval to ovate.

A set of eight eggs, taken in southern Dakota, June 13th, 1883, measure: 1.88x1.32, 1.88x1.37, 1.80x1.35, 1.79x1.35, 1.82x1.34, 1.86x1.37, 1.87x1.37, 1.82x1.35.

Anas cyanoptera VIEILL.

CINNAMON TEAL.

PLATE V.

Rare in eastern, but not uncommon in middle and western Kansas; occasionally breed there.

B. 582. R. 610. C. 717. G. 289, 30. U. 141.

HABITAT. Western America, from Washington Territory south to Chili and Falkland Islands; in North America, east to the plains and casual to Florida and Manitoba.

SP. CHAR. "*Adult male*: Head, neck and lower parts rich purple chestnut, duller—sometimes quite dusky—on the abdomen; pileum and crissum black; scapulars and part of the back chestnut, marked with U-shaped bars of black, the middle of the back more dusky; tertials black, with a central stripe of buff; longer scapulars similar, the outermost feathers with the outer webs light blue; lesser wing coverts plain light blue; middle coverts dusky, tipped with white; speculum uniform green, varying from metallic grass green to bronze; primaries and primary coverts dusky; upper tail coverts dusky, edged with pale fulvous; rectrices dusky, edged with brownish white or pale brownish gray; axillars immaculate pure white. Bill deep black; iris orange; feet orange, joints and webs blackish. *Adult female*: Similar to that of *Q. discors*, but larger and deeper colored, only the upper part of the throat (sometimes only the chin) unstreaked, the abdomen usually distinctly spotted; jugulum deeply tinged with light brown. *Young male*: Similar to the adult female, but markings on the lower parts all distinctly longitudinal or streak-like. *Downy young*: Above, dark olivaceous, relieved by a longitudinal, oblong oblique spot of deep greenish buff on each side of the back (behind the wings), and a similar spot of clearer yellowish on each side of the base of the tail; the anterior spots confluent with the yellow of the sides, the posterior ones isolated by the extension beneath them of the olivaceous of the tail. Pileum and nape similar to the back, but darker; forehead, broad superciliary stripe, and rest of the head and neck, except as described, with the entire lower parts, deep yellowish buff, the sides of the head marked with a distinct narrow stripe of dark brown, extending from the upper base of the maxilla to the eye, thence back to the occiput."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	16.50	25.50	7.75	3.50	1.25	1.75
Female . . .	14.50	23.50	7.30	3.10	1.20	1.65

This western species is quite common east of the plains, rare beyond, and but a straggler east of the Mississippi River. Their habits, so far as they have come under my observation, are similar to the Blue-wing.

The birds no doubt occasionally breed throughout their range, but chiefly between latitudes 40° and 46° north. June

3d, 1885, I shot a female at a grassy pond, in Meade county, with well-developed eggs in the ovary. I have since noticed the birds in western Kansas, during the summer months. On the first of June, 1877, I found the birds quite common at Como Lake, Wyoming Territory; they were breeding in the large, boggy marsh adjoining.

Their nests are made of grasses and lined with feathers and down. Eggs eight to twelve, 1.87x1.38; creamy white or pale buff; in form, oval.

A set of ten eggs, taken in Nevada, June 1st, 1887, measure: 1.87x1.39, 1.90x1.36, 1.88x1.40, 1.88x1.41, 1.83x1.40, 1.80x1.39, 1.92x1.40, 1.81x1.39, 1.92x1.32, 1.88x1.35.

GENUS **SPATULA** BOIE.

"Bill longer than the head, much expanded, or almost spatulate, terminally, where about twice as wide as the compressed base; maxillary lamellæ very thin, lengthened, almost completely exposed posteriorly, where resemble the teeth of a fine comb. Tail short, the feathers acute.

"Of this very curious and well-marked genus, in which, however, there is little that is peculiar except in the form of the bill, about five species are known, one occurring throughout the northern hemisphere, the others peculiar to South America, South Africa, Australia, and New Zealand."

Spatula clypeata (LINN.).

SHOVELLER.

PLATE V.

Summer resident, rare; in migration, common. Arrive the middle of March to first of April; begin laying the last of May; leave late in the fall.

B. 583. R. 608. C. 718. G. 287, 31. U. 142.

HABITAT. Northern hemisphere in general. In North America, breeding from Texas to Alaska.

SP. CHAR. "*Adult male, in winter:* Head and neck dark metallic bluish green, much duller than in *Anas boschas*; breast and outer scapulars white, the former sometimes spotted with dusky; entire abdomen and sides uniform chestnut; crissum dark metallic bluish green, bounded anteriorly by a band of finely undulated grayish white. Back and inner scapulars dusky, the feathers sometimes bordered with white; longer lanceolate scapulars marked with a mesial lanceolate stripe of white; wing coverts light grayish blue, the last row tipped with white, forming a narrow band across the wing; speculum bright metallic green, very narrowly tipped with white; tertials dusky black, with faint green

reflections, and marked toward the end with an indistinct mesial stripe of grayish white; primaries and their coverts dull slate gray; rump and upper tail coverts black, the former with faint (the latter with bright) green reflections; rectrices chiefly grayish white, the middle ones dark gray edged with white. Bill deep black; iris bright yellow; legs and feet beautiful orange red. *Adult female*: Wings as in the male, but colors rather duller. Other parts grayish brown above, varied with brownish white; brownish white below, the head and neck streaked, the breast, abdomen, etc., spotted, with grayish brown. Bill brown, mandible orange; iris yellow and feet orange red, as in the male. *Young male*: Similar to the adult female, but lower parts (always?) tinged with chestnut. *Young female*: Similar to the adult, but wing coverts dull slate, with little, if any, blue tinge, the speculum dusky, with a very faint green reflection, and rather broadly tipped with brownish white. *Downy young*: Above, grayish brown, with a brownish white spot on each side of the back, and a corresponding pair on the rump; pileum darker than the back and nape; head (except pileum) and entire lower parts pale grayish fulvous, or dirty, grayish buffy white, shaded with brownish gray across the jugulum; a narrow stripe of dark brown from the upper angle of the base of the bill to the eye, and continued posteriorly about half way to the occiput; another similar stripe beneath the last, beginning a little behind the posterior border of the eye, and extending farther back than the one above it."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	20.00	32.50	9.75	3.75	1.50	2.60
Female . . .	19.25	31.50	9.25	3.60	1.45	2.50

The birds are rare upon the Atlantic coast, but rather common throughout their range elsewhere; they are generally found in small flocks. I have occasionally noticed them on salt water, and often resting upon the open waters of our ponds and lakes, but their favorite resorts are in shallow waters, among the aquatic plants, where they largely feed, often with head and neck immersed, dabbling at the muddy bottom (like the Roseate Spoonbill), and straining the mud from their catch through their fine, sieve-like teeth. Their food consists of grain, tender shoots and seeds of water plants, insects, snails—in fact all low forms of life. When fat, are very good eating.

They are at home upon the land as well as upon the water. In flight steady and strong, but not swift. Their voice is feeble and seldom heard.

Their nests are usually placed near the water, upon dry ground; if on marshy lands, upon a hummock; they are lined with grass and down. Eggs eight to ten. A set of ten, col-

lected May 27th, 1868, at Horicon Lake, Wisconsin, average 2.14x1.50; greenish to buff white; in form, ovate.

GENUS **DAFILA** STEPHENS.

"Bill longer than the head, narrow, the edges parallel, deep through the base, but otherwise much depressed, the basal portion of the culmen much ascending. In the male, the scapulars, tertials and middle rectrices lanceolate, the latter elongated considerably beyond the other tail feathers. The adult male in winter plumage very different from the adult female, but the sexes much alike in summer."

Dafila acuta (LINN.).

PINTAIL.

PLATE V.

Migratory; common. Arrive the last of February to first of March; return in September; often remain into winter.

B. 578. R. 605. C. 710. G. 285. 32. U. 143.

HABITAT. Northern hemisphere in general; in North America, breeding from the northern United States northward to Iceland, and south in winter to Cuba and Panama.

SP. CHAR. "*Adult male, in winter:* Head and upper half of the neck hair brown or grayish umber, the upper surface darker, often inclining to deep burnt umber; all the feathers (usually) appreciably darker centrally, producing an indistinctly and minutely-speckled appearance; on each side of the occiput the brown has a metallic gloss of dull green, showing a faint purple reflection in some lights. Upper half of the nape opaque intense black, separated from the brown by an upward extension of the white of the lower neck nearly to the occiput. Stripe on each side of the nape (as described above); lower half of the neck frontally and laterally, jugulum, breast and abdomen immaculate white. Lower half of the nape, with entire dorsal region and lateral lower parts, finely waved with transverse, rather zigzag, lines of white and black, of nearly equal width. Longer scapulars opaque velvety black centrally, edged broadly with grayish white; outer scapulars, with exposed ends of the outer webs, entirely velvety black. Tertials silvery ash, with a medial stripe of intense velvety black. Speculum dull green, varying to dull bronzy purple, with a subterminal bar of velvety black and a tip of white. Wing coverts very uniform brownish gray, the last row broadly tipped with cinnamon rufous. Primaries dull slaty. Upper tail coverts with outer webs black, the inner ones grayish white; lower coverts deep opaque velvety black, the exterior row with their outer webs white; post-femoral space delicate cream color. Tail feathers dark cinereous edged with white, the elongated middle pair uniform deep black. Bill plumbeous blue, the ungui, base and strip along the culmen black; iris brown; feet dusky. *Adult male, in summer:* Head, neck and upper parts generally as in the adult female, except that the abdomen is duller in color and less marked; back dull

dark brown, each feather having one or two irregular dirty-white bars, and some being irregularly vermiculated with that color; rump washed with gray; tail similar in color to that of the bird last described (*i. e.*, adult male, in winter), but the two central feathers are but slightly elongated; wings also as in the last-described stage of plumage, but the elongated secondaries and scapulars are shorter and blunter and in color dark gray, black along the center, some of the latter being marked like the back; flanks grayish brown, every feather having broad yellowish-white bars; under tail coverts as in the female. *Adult female*: Above plumbeous dusky, variegated transversely with yellowish white or pale ochraceous; these markings sometimes irregularly bar-like, but often of U-shaped form, one on the edge and one in the middle portion of each feather. Wing much as in the male, but metallic color of the speculum duller, the ochraceous bar anterior to it paler, and the white terminal bar tinged with buff; wing coverts narrowly tipped with whitish. Upper tail coverts broadly edged with whitish, and more or less marked with irregular (usually V-shaped) lines of the same. Tail feathers dusky, edged with whitish, and with more or less distinct indications of distant bars of the same. Head and neck dingy whitish, tinged with brown on the superior surface, which is heavily streaked with blackish; the other portions more finely and thinly streaked, the throat being nearly immaculate. Rest of the lower parts dingy white, the feathers more grayish beneath the surface; crissum and flanks streaked with dusky, but abdomen, etc., usually immaculate. *Young male*: Similar to the female, but markings on upper part more bar-like, and lower parts sometimes nearly wholly streaked. *Young female*: Speculum dilute raw umber, marbled toward base of feathers with dusky. All the feathers of the upper parts conspicuously and broadly bordered with buffy white; lower parts elsewhere densely streaked with dusky. *Downy young*: Above, grayish raw umber, with a white stripe along each side of the back, a white space on the wing and a white superciliary stripe. Beneath, grayish white, with a faint yellowish tinge; an umber-brown stripe behind the eye, and an indistinct space of the same over the ears."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	28.00	36.00	11.00	8.75	1.65	2.00
Female	22.00	33.00	9.75	4.50	1.60	1.90

This widely-distributed fresh-water Duck is one of the first arrivals. It haunts the wet prairies, muddy flats and the edges of reedy, grassy waters, feeding largely upon bulbous roots, tender shoots, insects and their larvæ, worms, snails, etc., and on their return in the fall, upon the various seeds of water plants and grain. I have frequently taken acorns from their crops.

The birds seldom dive, and I never saw one do so while feeding, but in searching for their food in the water immerse not only the head but a large share of the body, and it is an odd sight to



PLATE VI.

1. WOOD DUCK; Male. 2. Female. 3. REDHEAD; Male. 4. Female. 5. CANVAS-BACK; Male. 6. Female. 7. AMERICAN SCAUP DUCK; Male. 8. Female. 9. LESSER SCAUP DUCK; Male. 10. Female. 11. RING-NECKED DUCK; Male. 12. Female.

see a flock thus tipped up, and working their feet in the air, as if trying to stand upon their heads. They move about with a graceful motion of the head, and with tail partially erect, and upon the land step off with a dignity of carriage, as if impressed with the thought that they are no common Duck; in flight they are very swift.

Their nests are placed on low, but dry, grassy land, and not far from the water, usually under the shelter of a bush; a mere depression in the ground, lined with grass and down. Eggs usually seven to ten. A set of seven, collected May 1, 1879, in Hancock county, Iowa, (extreme southern breeding limits known,) measure: 2.10x1.50, 2.09x1.49, 2.09x1.50, 2.10x1.49, 2.13x1.50, 2.09x1.48, 2.08x1.46; pale grayish green to olive buff; in form, oval to ovate.

GENUS **AIX** BOIE.

"Bill small, much shorter than the head, all the lateral outlines gradually converging toward the end, the nail very large, broad and prominent, forming the tip of the bill; lamellæ completely hidden. Adult male, with the head crested, the colors rich and varied, and the markings elegant; tertials exceedingly broad, truncate."

Aix sponsa (LINN.).

WOOD DUCK.

PLATE VI.

Summer resident; common. Arrive the last of March to first of April; begin laying the last of April.

B. 587. R. 613. C. 719. G. 291, 33. U. 144.

HABITAT. The whole of temperate North America; breeding throughout its range. (Cuba; accidental in Europe.)

SP. CHAR. "*Adult male:* Chin, throat and foreneck pure white, sending off laterally two branches, the first across the cheeks, back of, and nearly to, the posterior angle of the eye, the second across the lower part of the neck, almost to the nape; both bars tapering toward the end, and somewhat curved or falcate in shape; a narrow white line begins at the point of the maxillary angle, and is continued back on each side of the crown, widening considerably on the side of the crest; a second white line commences about half an inch behind the eye, and nearly the same distance above the end of the white cheek bar, and follows the lower edge of the crest, where considerably wider than anteriorly; remainder of the head silky metallic green, violet and purple, as follows: Cheeks and space behind the white cheek bar soft violaceous black, in the latter region

extending up to the lower white stripe, but in the anterior area bounded above and anteriorly by dark metallic green; the orbital region and anterior half of the crest between the white lines metallic reddish purple; forehead, crown and posterior portion of the crest metallic green; terminal portion of the crest, above laterally, and beneath, dark metallic violet; jugulum rich purplish chestnut, with a metallic purple gloss laterally, the front and lower part marked with deltoid spots of white growing larger toward the breast; breast and abdomen immaculate white; sides of the breast with a broad white transverse bar, and a wide black one immediately behind it; sides and flanks pale fulvous buff, delicately undulated with black, the broad feathers forming the upper border each beautifully marked with two black crescentic bars, inclosing a white one; crissum dull black, fading gradually into dull rusty fulvous on the anal region. Back, lesser wing coverts and rump dark slaty brownish, very faintly glossed with bronze, the wing coverts more slaty, the rump much darker, and gradually deepening into black toward the upper tail coverts, which, with the tail, are deep black, the latter with bronze green reflections in certain lights; a somewhat ovate patch (pointed posteriorly) of rich dark metallic maroon purple on each side of the rump, immediately behind the flanks; just behind this, the two or three elongated lateral upper tail coverts are marked with a central stripe of deep fulvous, falling gracefully over the sides of the crissum; tertials and posterior scapulars intense black, with rich velvety reflections of blue, green and purple (chiefly the first), in certain lights; the longest tertials tipped with a wide bar of white, the next black to the end, the third much shorter, much narrower than the rest, pointed, and of a dull greenish bronze color; middle and greater wing coverts steel blue, narrowly tipped with black; secondaries ('speculum') purplish steel blue, narrowly tipped with white, and with a narrow subterminal black bar; primary coverts slate color; primaries, with the exposed ends of the inner webs, steel blue, the ends of the outer webs grayish or glaucous white, becoming slate color basally; lining of the wing spotted with slate color and white. Sagittate longitudinal space on the culmen and terminal 'nail' of the bill deep polished black; an oblong space of milk white from the nostril to the 'nail;' a line or border of gamboge yellow following the basal outline of the bill; rest of bill dark purplish red, deepening into scarlet just behind the nostril; iris bright orange red; eyelids deep vermilion; legs and feet dull chrome yellow, the webs and joints dusky. *Adult female:* Feathers bordering the base of the bill all around, a space on side of the head surrounding the eyes and extending back in a point toward the occiput, chin and whole throat white; remainder of the head plumbeous gray, the crown and slight occipital crest glossed with metallic green; jugulum brownish, the feathers marked centrally with fulvous buff, those toward the breast tipped with white; remaining lower parts white, the crissum freckled with dusky grayish, the sides and flanks raw umber brown, spotted with brownish white; back, rump and upper tail coverts hair brown, glossed in certain lights with bronze and reddish purple; tail brightly glossed with greenish bronze; scapulars and tertials olivaceous umber, richly glossed with reddish purple and bronze; wings as in the adult male, but secondaries more widely tipped with white, and the four upper greater coverts rich metallic reddish purple, more bluish in the center, bronzy toward the edge and base, and narrowly tipped with velvety black; bill dark plum-

beous, the nail and longitudinal space on the culmen black; eyelids chrome yellow; iris raw sienna; legs and feet yellowish brown. *Downy young:* Above, deep hair brown, darker (or clove brown) on the pileum and tail; a dingy whitish bar along the posterior border of the arm wing, and a roundish spot of the same on each side of the rump. Lores, superciliary stripe extending back nearly to the occiput, with lateral and under parts of the head generally, bright sulphury buff, crossed by a wide stripe of blackish brown extending from the occiput forward to the eye; remaining lower parts dingy white, the sides brownish, this crossed on the flanks by an indistinct whitish bar."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	19.50	30.00	9.25	4.75	1.45	1.35
Female	18.00	28.50	8.60	4.50	1.45	1.35

This elegant Duck, with its full flowing crest and rich, varied attire, is unsurpassed in beauty by any of the water birds. It is very common throughout the United States, along the sluggish streams, ponds and marshy grounds skirted with trees, or near the wooded lands.

In flight the birds are very swift, and, without slacking their speed, wind with ease through the thick groves and heavily timbered forests.

Their food consists chiefly of insect life, the tender shoots and seeds of aquatic plants, grains, wild grapes and acorns, which they gather as well from the vines and tree tops as upon the ground; upon the latter they fatten fast, and at such times their flesh is tender, juicy, and most delicious to the taste when roasted—the proper, and in my opinion the only, way a duck should be cooked.

Audubon says: "Few birds are more interesting to observe during the love season than Wood Ducks. The great neatness and beauty of their apparel, and the grace of their motions, always afford pleasure to the observer; and, as I have had abundant opportunities of studying their habits at that period, I am enabled to present you with a full account of their proceedings. When March has again returned and the dogwood expands its pure blossoms to the sun, the Cranes soar away on their broad wings, bidding our country adieu for a season, flocks of water fowl are pursuing their early migrations, the frogs issue from their muddy beds to pipe a few notes of languid joy, the Swallow has just arrived and the Bluebird has returned to his box. The

Wood Duck almost alone remains on the pool, as if to afford us an opportunity to study the habits of his tribe. Here they are, a whole flock of beautiful birds; the males chasing their rivals, the females coquetting with their chosen beaux. Observe that fine drake! how gracefully he raises his head and curves his neck. As he bows before the object of his love he raises, for a moment, his silken crest. His throat is swelled and from it there issues a guttural sound, which to his beloved is as sweet as the song of the Wood Thrush to its gentle mate. The female, as if not unwilling to manifest the desire to please which she feels, swims close by his side and now and then caresses him by touching his feathers with her bill, and shows displeasure towards any other of her sex that may come near. Soon the happy pair separate from the rest, repeat every now and then their caresses, and at length, having sealed the conjugal compact, fly off to the woods to search for a large Woodpecker's hole. Occasionally the males fight with each other, but their combats are not of long duration nor is the field ever stained with blood, the loss of a few feathers or a sharp tug of the head being generally enough to decide the contest. Although the Wood Ducks always form their nests in the hollow of a tree their caresses are performed exclusively on the water, to which they resort for that purpose, even when their loves have been first proved far above the ground on a branch of some tall sycamore. While the female is depositing her eggs the male is seen to fly swiftly past the hole in which she is hidden, erecting his crest and sending forth his love notes, to which she never fails to respond. On the ground the Wood Duck runs nimbly and with more grace than most other birds of its tribe. On reaching the shore of a pond or stream, it immediately shakes its tail sidewise, looks around, and proceeds in search of food. It moves on the larger branches of trees with the same apparent ease; and, while looking at thirty or forty of these birds perched on a single sycamore on the bank of a secluded bayou, I have conceived the sight as beautiful as any that I ever enjoyed. They always remind me of the Muscovy Duck, of which they look as if a highly finished and

flattering miniature. They frequently prefer walking on an inclined log or the fallen trunk of a tree, one end of which lies in the water while the other rests on the steep bank, to betaking themselves to flight at the sight of an approaching enemy. In this manner I have seen a whole flock walk from the water into the woods, as a steamer was approaching them in the eddies of the Ohio or Mississippi. They swim and dive well, when wounded and closely pursued, often stopping at the edge of the water with nothing above it but the bill, but at other times running a considerable distance into the woods or hiding in a canebrake beside a log. In such places I have often found them, having been led to their place of concealment by my dog. When frightened they rise by a single spring from the water, and are as apt to make directly for the woods as to follow the stream. When they discover an enemy while under the cover of shrubs or other plants, on a pond, instead of taking to wing they swim off in silence among the thickest weeds, so as generally to elude your search by landing and running over a narrow piece of ground to another pond. In autumn a whole covey may often be seen standing or sitting on a floating log pluming and cleaning themselves for hours. On such occasions the knowing sportsman commits great havoc among them, killing half a dozen or more at a shot."

The birds nest in holes in trees on or near the banks of streams, usually in a trough-like cavity of a large, broken limb, lined sparingly with grass, weeds or leaves, and a few feathers with down. Eggs six to fifteen, 2.00x1.50; cream to buff white, smoothly polished; in form, oval to ovate. A set of seven eggs, taken June 4th, 1887, in Blackhawk county, Iowa, out of a hole in a stub, seven feet from the ground, are, in dimensions: 2.02x1.50, 1.99x1.50, 2.02x1.54, 2.00x1.51, 1.98x1.52, 1.93x1.49, 1.99x1.50. I have found them nesting in the Neosho valley, Kansas, in large elm and sycamore trees, at least seventy feet from the ground. When the nests are too high for the little ones to drop in safety, the mother carries them, one at a time, in her bill to the water's edge.

GENUS **AYTHYA** BOIE.

Culmen longer than inner toe with claw; bill not wider near end than at base; head and neck reddish in adult males. Bill much shorter than middle toe without claw, its greatest width nearly half the length of the culmen, the end moderately depressed, and the nail decidedly hooked. (*Ridgway.*)

Aythya americana (EXT.).

REDHEAD.

PLATE VI.

Migratory; common. Arrive the first of March to middle of April; return in September.

B. 591. R. 618. C. 723. G. 296, 34. U. 146.

HABITAT. North America in general; breeding from California, Wisconsin and Maine northward.

SP. CHAR. "Bill much shorter than the middle toe without claw, broad, the end moderately depressed, and with the nail decidedly decurved, the culmen about two and a half times the greatest width of the maxilla, and decidedly concave. *Adult male*: Head and upper half, or more, of the neck rich reddish chestnut, the latter glossed with reddish purple; lower part of the neck, jugulum, anterior part of the back, lower part of the rump, upper tail coverts and crissum black; back, scapulars, sides and flanks densely vermiculated with white and dusky in about equal proportion; anal region similarly (but more faintly) marked; entire abdomen immaculate white; wing coverts deep plumbeous gray, faintly and minutely sprinkled with white; secondaries ('speculum') pale bluish gray, the upper feathers edged with black, the others narrowly tipped with white; primaries dusky, the inner quills slate gray, except at ends; tail dusky. Bill pale blue, the end black; iris red; feet bluish gray. *Adult female*: Head and neck grayish brown, darkest above; the anterior part of the head lighter, almost white on the chin and upper part of the throat; jugulum, sides and flanks dull grayish brown, the feathers tipped with fulvous; wings as in the male, but the coverts plain slate color; back and scapular grayish brown, the feathers with paler tips; rump, upper tail coverts and tail dusky grayish brown; anal region paler; longer lower tail coverts whitish. Bill plumbeous, the end black; iris yellow; feet plumbeous. *Downy young*: Above, ochraceous olive brown, indistinctly relieved by an olive-yellow spot back of each wing, one on the hind border of each arm wing, and one on each side of the rump; entire head and neck (except the pileum and nape), with whole lower parts, deep buff yellow, paler and less yellow on abdomen and anal region. No dark markings whatever on side of head. Bill and feet light colored (brownish in dried skin)."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	21.00	33.50	9.25	2.75	1.60	1.90
Female . . .	18.50	32.00	8.70	2.30	1.60	1.80

This deep-water Duck, though widely distributed, is not so common on the Pacific slope as east of the Rocky Mountains.

It is usually found in flocks upon the open waters, associating with the Canvas-back, and diving with them for its food, which chiefly consists of small mollusks, crustacea, fishes, frogs, water newts, and various kinds of submarine and fresh-water grasses and plants. I have occasionally noticed the birds in shallow water dabbling in the mud.

They are much sought after by the gunner, for they are a good table Duck, and in the market are often sold for the highly-prized Canvas-back, which they rather closely resemble. They are therefore very wary, and off at the sight of an intruder. Various methods are resorted to in order to bag them, tolling, netting, etc., but they are mostly shot on the wing over decoys, from blinds, punts, and points of land extending out into the water. When suddenly started they spring from the water in a wild, confused manner, often with a quacking note, but once fairly in the air fly swiftly and straight as an arrow.

Their nests are usually placed on low, grassy grounds and near the water. Eight nests, containing from one to five eggs, were found by my brother, May 24th, 1868, on a small island in Horicon Lake, Wisconsin. They were all near together, (Mallards and other Ducks were nesting beside them,) in a thick growth of grass and weeds, and not over twenty feet from the water's edge; they were rather loosely made of the grasses and material at hand, and lined with down. It was too early in the season for a full set, which is usually seven to ten. A set of eight, taken in northern Dakota, June 2d, 1880, from a nest in rushes at the edge of the water, are, in dimensions: 2.64x1.73, 2.50x1.79, 2.42x1.76, 2.42x1.80, 2.52x1.80, 2.47x1.70, 2.54x1.76, 2.64x1.79; grayish white to pale greenish buff; in form, oval to ovate.

***Aythya vallisneria* (WILS.).**

CANVAS-BACK.

PLATE VI.

Migratory; irregular; not uncommon. Arrive early in March—my notes show the capture of one February 22d; return in October.

B. 592. R. 617. C. 724. G. 295, 35. U. 147.

HABITAT: North America in general; breeding far northward.

SP. CHAR. "Bill long and narrow, the end much depressed, with the nail scarcely decurved, the base high, with the culmen gradually sloping and scarcely concave; culmen nearly as long as middle toe without claw, and about three times the greatest width of the maxilla. *Adult male:* Head and neck chestnut rufous, the former brownish dusky (sometimes quite blackish) anteriorly and on top; jugulum and anterior part of back, lower part of rump, upper tail coverts and posterior part of crissum black; back, scapulars, flanks, sides and anal regions white, finely and delicately vermiculated with dusky; breast and abdomen immaculate white. Wing coverts deep ash gray, finely sprinkled with white; secondaries (speculum) lighter, more bluish gray, the upper feathers edged with black; tertials like the longer scapulars; primaries slate color, the inner quills more cinerous, except at ends, where dusky; tail dusky. Bill entirely greenish black; iris carmine red; feet bluish gray. *Adult female:* Head, neck, jugulum and anterior part of back raw-umber brown, a post-ocular space and the foreneck whitish, the chin, throat and cheeks tinged with fulvous; wings as in the male, but coverts almost or quite uniform gray; back, scapulars, sides and flanks with only the exposed ends of the feathers vermiculated with white and dusky, the remainder being grayish brown. Bill greenish black; iris brownish red; feet plumbeous."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	22.00	34.00	9.25	2.75	1.70	2.40
Female . . .	20.00	32.00	8.50	2.55	1.65	2.30

This highly-esteemed Duck is exclusively a North American species; they have been found breeding on the inland waters from Oregon and Manitoba to Fort Yukon, Alaska, and south in winter to Guatemala. The birds are quite rare in the north-eastern States, increasing in numbers westward to the Pacific coast; some seasons very common. As they associate in large flocks upon their feeding grounds, are generally thought to be more abundant than they really are.

This species, so highly prized as a game bird, is entitled to more than a passing notice; and I know that I cannot please the reader better than to quote from Wilson's interesting description of its habits, wherein he says:

"The Canvas-back Duck arrives in the United States from the north about the middle of October; a few descend to the Hudson and Delaware, but the greater body of these birds resort to the numerous rivers belonging to and in the neighborhood of the Chesapeake Bay, particularly the Susquehanna, the Patapsco, Potomac and James rivers, which appear to be their

general winter rendezvous. Beyond this to the south, I can find no certain account of them. At the Susquehanna, they are called Canvas-backs; on the Potomac, White-backs, and on the James River, Shelldrakes. They are seldom found a great distance up any of these rivers, or even in the salt water bay; but in that particular part of the tide water where a certain grass-like plant grows, on the roots of which they feed. This plant, which is said to be a species of *Vallisneria*, grows on fresh-water shoals of from seven to nine feet (but never where these are occasionally dry), in long, narrow grass-like blades of four or five feet in length; the root is white, and has some resemblance to small celery. This grass is in many places so thick that a boat can with difficulty be rowed through it, it so impedes the oars. The shores are lined with large quantities of it, torn up by the Ducks and drifted up by the winds, lying like hay in windrows. Wherever this plant grows in abundance the Canvas-backs may be expected either to pay occasional visits or to make it their regular residence during the winter. It occurs in some parts of the Hudson, in the Delaware, near Gloucester, a few miles below Philadelphia, and in most of the rivers that fall into the Chesapeake, to each of which particular places these Ducks resort; while in waters unprovided with this nutritive plant they are altogether unknown.

“On the arrival of these birds in the Susquehanna, near Havre de Grace, they are generally lean, but such is the abundance of their favorite food, that towards the middle of November they are in pretty good order. They are excellent divers, and swim with great speed and agility. They sometimes assemble in such multitudes as to cover several acres of the river, and when they rise suddenly, produce a noise resembling thunder. They float about the shoals, diving and tearing up the grass by the roots, which is the only part they eat. They are extremely shy, and can rarely be approached, unless by stratagem. When wounded in the wing, they dive to such prodigious distances, and with such rapidity, continuing it so perseveringly, and with such cunning and active vigor, as almost always to render the pursuit hopeless. From the great demand for these Ducks, and

the high price they uniformly bring in market, various modes are practiced to get within gunshot of them. The most successful way is said to be decoying them to the shore by means of a dog, while the gunner lies concealed in a proper situation. The dog, if properly trained, plays back and forwards along the margin of the water, and the Ducks, observing his manœuvres, enticed perhaps by curiosity, gradually approach the shore, until they are sometimes within twenty or thirty yards of the spot where the gunner lies concealed, and from which he rakes them, first on the water, and then as they rise. This method is called "tolling them in." If the ducks seem difficult to decoy, any glaring object, such as a red handkerchief, is fixed around the dog's middle or to his tail, and this rarely fails to attract them. Sometimes, by moonlight, the sportsman directs his skiff towards a flock whose position he has previously ascertained, keeping within the projecting shadow of some wood, bank or headland, and paddles along so silently and imperceptibly as often to approach within fifteen or twenty yards of a flock of many thousands, among whom he generally makes great slaughter.

"Many other stratagems are practised, and indeed every plan that the ingenuity of the experienced sportsman can suggest, to approach within gunshot of these birds; but of all the modes pursued, none intimidate them so much as shooting them by night; and they soon abandon the place where they have been thus repeatedly shot at. During the day they are dispersed about, but towards evening collect in large flocks, and come into the mouths of creeks, where they often ride, as at anchor, with their head under their wing asleep, there being always sentinels awake, ready to raise an alarm on the least appearance of danger. Even when feeding and diving in small parties, the whole never go down at one time, but some are still left above on the lookout.

"When winter sets in severely, and the river is frozen, the Canvas-back retreats to its confluence with the bay, occasionally frequenting air holes in the ice, which are sometimes made for the purpose, immediately above their favorite grass, to entice

them within gunshot of the hut or bush which is usually fixed at a proper distance, and where the gunner lies concealed, ready to take advantage of their distress. A Mr. Hill, who lives near James River, at a place called Herring Creek, informs me that one severe winter he and another person broke a hole in the ice about twenty by forty feet, immediately over a shoal of grass, and took their stand on the shore in a hut of brush, each having three guns well loaded with large shot. The Ducks, which were flying up and down the river in great extremity, soon crowded to this place, so that the whole open space was not only covered with them, but vast numbers stood on the ice around it. They had three rounds, firing both at once, and picked up eighty-eight Canvas-backs, and might have collected more had they been able to get to the extremity of the ice after the wounded ones. In the severe winter of 1779-80, the grass on the roots of which these birds feed was almost wholly destroyed in James River. In the month of January, the wind continued to blow from west-northwest for twenty-one days, which caused such low tides in the river that the grass froze to the ice everywhere, and, a thaw coming on suddenly, the whole was raised by the roots and carried off by the freshet. The next winter a few of these Ducks were seen, but they soon went away again; and, for many years after, they continued to be scarce, and even to the present day, in the opinion of my informant, have never been so plenty as before.

▷ “The Canvas-back, in the rich, juicy tenderness of its flesh and its delicacy of flavor, stands unrivaled by the whole of its tribe in this or perhaps any other quarter of the world. Those killed in the waters of the Chesapeake are generally esteemed superior to all others, doubtless from the great abundance of their favorite food which these rivers produce. At our public dinners, hotels and particular entertainments, the Canvas-backs are universal favorites. They not only grace but dignify the table, and their very name conveys to the imagination of the eager epicure the most comfortable and exhilarating ideas. Hence, on such occasions, it has not been uncommon to pay from one to three dollars a pair for these Ducks; and, indeed,

at such times, if they can they must be had, whatever may be the price.

“The Canvas-back will feed readily on grain, especially wheat, and may be decoyed to particular places by baiting them with that grain for several successive days. Some few years since, a vessel loaded with wheat was wrecked near the entrance to Great Egg Harbor, in the autumn, and went to pieces. The wheat floated out in vast quantities, and the whole surface of the bay was, in a few days, covered with Ducks of a kind altogether unknown to the people of that quarter. The gunners of the neighborhood collected in boats in every direction, shooting them; and so successful were they, that, as Mr. Beasley informs me, two hundred and forty were killed in one day, and sold among the neighbors at twelve and a half cents apiece without the feathers. The wounded ones were generally abandoned, as being too difficult to come up with. They continued about for three weeks, and during the greater part of the time a continual cannonading was heard from every quarter. The gunners called them Sea Ducks. They were all Canvas-backs, at that time on their way from the north, when this floating feast attracted their attention, and for a while arrested them in their course. A pair of these very Ducks I myself bought in Philadelphia market at the time, from an Egg Harbor gunner, and never met with their superior either in weight or excellence of flesh. When it was known among these people the loss they had sustained in selling for twenty-five cents what would have brought them from a dollar to a dollar and a half a pair, universal surprise and regret were naturally enough excited.”

The nests of this bird are usually found in thick growths of grass, reeds and rushes growing in shallow water. They are made of grasses and material at hand, are built from the ground up, and often quite bulky, and are lined with down. Eggs usually seven or eight, 2.50x1.76; pale grayish olive green; in form, oval to ovate.

SUBGENUS FULIGULA STEPHENS.

Culmen as long as outer toe with claw; bill wider at end than at base; head and neck black in adult males. (*Ridgway*.)

***Aythya marila nearctica* STEJN.**

AMERICAN SCAUP DUCK.

PLATE VI.

Migratory; rare. Arrive early in March to first of April; begin to return in October.

B. 588. R. 614. C. 720. G. 292, 36. U. 148.

HABITAT. North America in general; breeding far northward.

SP. CHAR. "Head, neck and jugulum black, the first with a greenish gloss; back and scapulars white, irregularly undulated with zigzag lines of black; wing coverts dusky, finely grizzled with grayish white; secondaries white, tipped, and sometimes narrowly edged, with black; tertials black, with a faint bottle-green reflection; primary coverts dusky black; primaries similar, but the inner quills pale grayish on outer webs except at ends, the gray growing whiter on the shorter feathers; rump, upper tail coverts, tail and crissum dull black. Lower parts between the jugulum and crissum white, the posterior portion (and sometimes the sides and flanks) zigzagged with dusky. Bill pale blue (or bluish white) in life, the nail black; iris bright yellow; legs and feet pale slate. *Adult female:* Head and neck sepia brown, the anterior portion of the former, all around the base of the bill, white; jugulum, anal region and crissum pale grayish brown, fading gradually into the white of the breast and abdomen; sides and flanks deeper brown; above, brownish dusky, the back and scapulars but faintly or not at all grizzled with white; wings much as in the male."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	19.75	33.00	9.00	2.80	1.55	2.00
Female . . .	18.25	31.50	8.50	2.50	1.55	1.80

This northern species (also the Lesser Scaup) are generally known as the "Blue-bill," "Broad-bill" and "Black-head." They breed from Manitoba north into the Arctic Ocean; and are reported south, in winter, to Guatemala. I never met with the birds there, and think they seldom go much, if any, south of the United States. (I did, however, meet with the Lesser Scaup, which is often taken for this species, on the Amatitlan Lake, Guatemala, also in Mexico.)

The birds breed largely inland, but during the fall and winter frequent the estuaries and salt-water bays. Their food is largely procured by diving; it consists of small fishes, mollusks, crustacea, etc., also aquatic plants and seeds. When fat, are a very good table Duck.

In swimming the birds have a habit of occasionally raising their crests and uttering a rather low, booming note, also of

huddling together; and when at such times they suddenly spring into the air, the roaring noise made by their wings is astounding.

Their nests are usually placed on dry, grassy grounds, at or near the water's edge; a mere excavation, with but little and sometimes no material except down. Eggs usually six to nine, 2.54x1.71; pale buffy olive gray; in form, oval to ovate. A set of eight eggs, taken June 14th, 1882, in Labrador, measure: 2.61x1.70, 2.51x1.70, 2.51x1.70, 2.58x1.70, 2.50x1.70, 2.57x1.71, 2.58x1.70, 2.50x1.71.

***Aythya affinis* (EYT.).**

LESSER SCAUP DUCK.

PLATE VI.

Migratory; quite common. Arrive early in March to first of April; return late in the fall.

B. 589. R. 615. C. 721. G. 293, 37. U. 149.

HABITAT. North America in general; breeding chiefly north of the United States; south in winter to Guatemala and the West Indies.

SP. CHAR. "Entirely similar to *A. marila nearctica*, but smaller. Beyond the decidedly smaller size, we can perceive no difference between this bird and *A. marila nearctica* which seems to be constant. In most of the specimens before us, however, the green gloss of the head is much less distinct—in fact, wanting entirely—or in many replaced by faint purplish; while the lower part of the neck is usually dull brownish and quite lusterless, in many examples forming quite a distinct collar, as in specimens of *A. collaris*, though the color is never so rufescent as in the latter species. The zigzag markings on the back and scapular appear to be, as a rule, somewhat coarser than in *A. marila nearctica*. As in the larger species, the sides and flanks may be either marked with dusky or quite immaculate."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	16.50	29.00	8.00	2.70	1.45	1.65
Female . . .	15.50	28.00	7.75	2.50	1.40	1.60

I have found this widely-distributed species very common, from the Atlantic to the Pacific; usually in flocks upon the streams and ponds, also along the coast in brackish waters, but seldom out upon the open bays, where *nearctica* loves to resort. In other respects their habits are the same. Their eggs are smaller. A set of six eggs, taken June 20th, 1886, in Alaska,

measure: 2.26x1.52, 2.25x1.52, 2.20x1.50, 2.17x1.52, 2.25x1.51, 2.21x1.50.

***Aythya collaris* (DONOV.).**

RING-NECKED DUCK.

PLATE VI.

Migratory; common. Arrive very early; my notes show their capture from February to May 24th; usually leave in April; return late in the fall.

B. 590. R. 616. C. 722. G. 294. 38. U. 150.

HABITAT. North America in general; breeding from latitude 42° north to 62°; south in winter to Guatemala and the West Indies.

SP. CHAR. "*Adult male*: Head, neck, jugulum, crissum, and upper parts generally, black, the head and neck with a faint violet gloss, the wing coverts inclining to slate; secondaries (speculum) bluish gray, darker subterminally, and very narrowly tipped with white; primaries slate gray, the outer quills and ends of others dusky. A triangular spot of white on the chin, and a more or less distinct collar of chestnut around the lower neck; breast and abdomen white, abruptly defined anteriorly against the back of the jugulum, but changing insensibly into the black on the crissum, through a graduated barring or transverse mottling of white and dusky; sides white, delicately undulated with grayish dusky; axillars and lining of the wing immaculate white; bill lead color, with a narrow basal and broad subterminal band of bluish white, the end black; iris bright yellow; legs and feet pale slaty. *Adult female*: Crown and nape dull dark brown, becoming gradually lighter below; rest of the head paler and grayer, the anterior half of the lores, the chin, throat and foreneck nearly or quite white; jugulum, sides and flanks deep fulvous or raw umber brown; breast and abdomen white; anal region brown; long feathers of the crissum whitish; wings as in the male; remaining upper parts dull dark brown, the feathers of the back narrowly tipped with fulvous. Bands on the bill narrower and less distinct than in the male; iris yellow; feet slaty. *Downy young*: Above, grayish umber brown, relieved by seven spots of light buff, as follows: A small and inconspicuous spot in the middle of the back between, and a little anterior to, the wings; a large patch on each side of the back; another on each side the rump, at the base of the tail, and a bar across the posterior border of each wing. Crown, occiput and nape crossed longitudinally by a wide stripe of deep grayish umber; a rounded isolated spot of light grayish brown directly over the ears; remainder of the head, including the forehead, and lower parts generally, light dingy buff, the flanks crossed by a brown transverse stripe from the rump to the tibia. Side of the head without any longitudinal stripes.

"The chief variation in the plumage of this species consists in the distinctness of the chestnut collar in the male. In some examples this is scarcely more conspicuous than in *A. affinis*, being dull brown instead of reddish; but usually the color is a well-defined chestnut, particularly in front."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	17.75	28.50	8.00	2.70	1.30	1.90
Female . . .	16.50	26.50	7.40	2.30	1.20	1.80

The birds are not very abundant anywhere, but more common in the interior than upon either coast. In habits, as well as in distribution, they are similar to the Lesser Scaup.

May 24th, 1867, my brother found one of their nests, containing ten eggs, at Pewaukee, Wisconsin; it was placed in a thick growth of grass near the water's edge, and rather neatly made of old grasses and slightly lined with feathers and down. In the early settlement of the State they were quite a common summer resident there. He has since found several of their nests in Minnesota; and the birds have also been found breeding at Calais, Maine, in Manitoba, and on the McKenzie River, at Fort Simpson.

Eggs usually seven to ten, 2.33x1.57; in color and form the same as the Scaup species.

GENUS **GLAUCIONETTA** STEJNEGER.

"Graduation of tail much more than length of bill from nostril; distance from tip of bill to loreal feathering less than graduation of tail; distance from anterior end of nostril to loreal feathers equal to or greater than width of bill at base; distance from anterior end of nostril to tip of bill much less than from same point to loreal feathers; tail less than twice as long as tarsus."

Glaucionetta clangula americana (BONAP.).

AMERICAN GOLDEN-EYE.

PLATE VII.

Migratory; rare. An occasional winter sojourner.

B. 593. R. 620. C. 725. G. 297, 39. U. 151.

HABITAT. North America in general, north to the Arctic coast; south in winter to Mexico and Cuba.

SP. CHAR. "*Adult male:* Head and upper half of neck black, glossed with dark green, varying to violet; a roundish white spot between the rictus and the eye, but not reaching to the latter; back, inner scapulars, tertials, rump and upper tail coverts deep black; lower half of the neck (all round), lower parts, outer scapulars, posterior lesser, middle and greater wing coverts and secondaries pure white; anterior lesser wing coverts, and outer edges of scapulars and flank feathers, and concealed portion of greater coverts, deep black; primaries blackish dusky; tail dull slate; sides of anal region behind the flanks clouded



PLATE VII.

1 AMERICAN GOLDEN-EYE; Male. 2, Female. 3, BUFFLEHEAD; Male. 4, Female. 5, SNOW GOOSE; Juv. Male. 6, 7, RUDDY DUCK; Male. 8, Female. 9, BLUFF GOOSE; Juv. Female. 10, LESSER SNOW GOOSE; Juv. Male. 11, Female. 12, AMERICAN WHITE-FRONTED GOOSE; Male.

with grayish; bill deep black; iris bright yellow; feet orange yellow, with dusky webs. *Adult female*: Similar to that of *C. islandica*, but head and neck hair brown or grayish brown, rather than purplish sepia or snuff brown, and white on the wing usually not interrupted by a distinct black bar. *Downy young*: Upper parts generally, including the whole upper half of the head, to the rictus, and considerably below the eyes, the jugulum, sides and thighs, deep sooty brown, lighter and more grayish on the jugulum; the brown of the upper parts relieved by about eight spots of grayish white, as follows: one on the posterior border (secondary region) of each wing; One on each side the back, one on each side the rump, at the base of the tail, and one on each flank just before the brown of the thighs; chin, throat and cheeks pure white, in abrupt and decided contrast to the brown, which entirely surrounds it; remaining lower parts grayish white; bill brownish; nail yellowish."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	20.00	31.50	9.10	4.00	1.60	1.40
Female . . .	18.00	28.50	8.25	3.60	1.50	1.30

This species has been found breeding at Lake Umbagog, New Hampshire, Calais, Maine, Manitoba, and north to Newfoundland and the Yukon River, Alaska. I have met with the birds upon both coasts, and in the interior, but nowhere in abundance, or very common. They are at home on the water, and when approached usually escape by diving. In leaving the water they run for some distance upon its surface, striking vigorously with their wings and feet, making with their wings a whistling noise, that in flight can be heard a long distance. Their food is procured almost wholly by diving; it consists of small bivalves, crustacea, fishes, etc. I have never found any grasses or seeds in their crops, but they undoubtedly do occasionally feed on vegetable matter.

Their nests are placed in holes and hollow cavities in stumps and trees, and lined with feathers and down; sometimes a foundation is made of leaves and grass. Eggs usually nine or ten. A set taken May 15th, 1882, from a hole in a tree, at Umbagog Lake, New Hampshire, are in dimensions: 2.45x1.75, 2.45x1.78, 2.48x1.79, 2.38x1.74, 2.45x1.77; and of a uniform light grayish pea green; in form, ovate.

GENUS **CHARITONETTA** STEJNEGER.

Distance from anterior end of nostril to tip of bill much greater than from same point to loreal feathers; tail more than twice as long as tarsus. (*Ridgway*.)

Charitonetta albeola (LINN.).**BUFFLE-HEAD.**

PLATE VII.

Migratory; irregular; at times quite common. Arrive the last of February to first of April; return late in the fall.

B. 595. R. 621. C. 727. G. 298. 40. U. 153.

HABITAT. North America, north to the Arctic coast; south in winter to Mexico and Cuba.

SP. CHAR. "*Adult male:* Head and upper half of the neck rich, silky, metallic green, violet purple and greenish bronze, the last prevailing on the lower part of the neck, the green on the anterior part of the head, the purple on the cheeks and crown; a large patch of pure white on the side of the head, extending from the eye back to and around the occiput; lower half of the neck, lower parts generally, wing coverts, secondaries and outer scapulars pure white, the latter narrowly, and the feathers of the flanks more widely, edged with black; posterior parts of the body beneath tinged with pale ash gray; upper tail coverts light hoary gray; tail slate gray, the shafts black. Bill bluish plumbeous, dusky on the nail and at its base; iris very dark brown; legs and feet pinkish or lilaceous white. *Adult female:* Head, neck, and upper parts generally, dusky grayish brown; an oblong or somewhat ovate white longitudinal patch on the auricular region, and the inner secondaries (sometimes also the greater wing coverts, except the ends) white; lower parts white, tinged with brownish gray posteriorly, anteriorly and laterally. Bill dusky, inclining to plumbeous at the end and along the commissure; iris very dark brown; legs and toes dilute lilac pink, the webs and joints darker.

"There is very little variation among the males of this species. The females vary in the markings of the wing, some having the greater coverts white, tipped with dusky, while in others only the inner secondaries are white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	15.15	24.25	6.75	3.25	1.30	1.12
Female	14.25	23.00	6.50	3.20	1.25	1.08

This little diving Duck has been found breeding at Pewaukee Lake, Wisconsin, Calais, Maine, Manitoba, and north to Yukon River, Alaska. I have found the birds rather more common than the Golden-eye; their general distribution and habits are the same.

Their nests are placed in holes and trough-like cavities in trees, and lined with feathers and down. Eggs usually nine or ten, 1.98x1.46; pale grayish buff; in form, oval to ovate. Dr. Coues, in his "Birds of the Northwest," gives a description of a set of fourteen eggs, taken from a feathery nest in a dead poplar, some distance from the ground.

GENUS **OIDEMIA** FLEMING.

"Feathers at the base of the maxilla forming a nearly straight oblique line from the forehead back to the rictus, advancing scarcely, if at all, on the forehead; bill very deep through the base, where sometimes elevated into a roundish knob, and much depressed toward the end. No white whatever on the plumage."

SUBGENUS **PELIONETTA** KAUP.

"Feathers on the forehead extending in a broad strip nearly or quite as far as the posterior end of the nostrils, but those of the lores not advancing forward of the rictus; the lateral base of the maxilla in the adult male greatly swollen, and with the basal outline convex; nail very large and broad, but narrowed terminally. No white on the wings, but the head with large white patches (indistinct in the female and young)."

Oidemia perspicillata (LINN.).

SURF SCOTER.

PLATE VII.

A rare visitant; captured October 29th, 1887, on the Kansas River, above the dam at Lawrence, by Mr. A. L. Bennett, of Emporia.

B. 602. 603. R. 633. C. 739. 740. G. —. —. U. 166.

HABITAT. North America in general; south in winter to Jamaica, Florida, Ohio River, Kansas, and Lower California; accidental in Europe.

SP. CHAR. "*Adult male*: General color deep black, very intense above, more sooty on the lower surface; a white patch on the forehead, the anterior outline semicircular or somewhat angular, and reaching forward a little in advance of the lateral base of the bill, the posterior outline almost directly transverse, and extending back to a little past the middle eye; nape with a somewhat shield-shaped or cuneate longitudinal patch of pure white, having the upper outline almost directly transverse; bill chiefly orange red, deeper (intense red in some specimens) above the nostrils; swollen base of the maxilla with a large, irregular roundish, somewhat quadrate, or trapezoidal, spot of deep black, with a light colored space (bluish white in life) in front, as far as the nostrils; nails duller orange, or dingy grayish; iris yellowish white; feet orange red, the webs greenish dusky; claws black; upper mandible with a nearly square black patch at the base, margined with orange, except in front, where there is a patch of bluish white extending to near the nostrils, prominent part over the nostrils deep reddish orange, becoming lighter toward the unguis, and shaded into rich yellow toward the margins; the unguis dingy grayish yellow; lower mandible flesh colored, unguis darker; iris bright yellowish white; tarsi and toes orange red, the webs dusky, tinged with green; claws black. *Adult female*: Pileum and nape brownish black; rest of head ashy brown, with an indistinct whitish patch (not always indicated) on the lower anterior portion

of the lores, bordering the lateral base of the bill; upper parts brownish dusky, the contour feathers sometimes showing paler tips; lower parts grayish brown, becoming nearly white on the abdomen, the feathers of the breast and sides tipped with the same, the anal region and crissum uniform dusky; bill greenish black, scarcely swollen at the base, where the black spot of the male is slightly, if at all, indicated; iris yellowish white; feet yellowish orange, webs grayish dusky, claws black. *Young:* Similar to the adult female, but head with two quite distinct whitish patches, one against the lateral base of the bill, the other over the auriculars, behind and below the eye; plumage above, more uniform than in the adult female, and feathers everywhere of a softer texture.

“There is considerable variation among individuals of this species, but we find no constant difference between specimens from the Atlantic coast and those from the Pacific.”

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	19.50	33.50	9.25	3.40	1.63	1.50
Female . . .	17.75	31.00	8.50	3.20	1.60	1.50

This species of the Sea Duck is abundant upon both coasts, and during the breeding season quite common upon the large northern inland waters; breeding from Sitka, Alaska, and the Gulf of St. Lawrence, north into the Arctic regions.

Their food consists largely of shellfish (the bivalve a favorite, the shells of which seem to digest as easily as the mussels within them); fishes and various forms of life also help to make up the bill of fare. Their flesh is coarse and in flavor rather rank.

The birds are at home as well in the surging surf as upon the smooth waters, resting and sleeping at night out upon the open waters; they rise from the same in a running, laborious manner, but when fairly on the wing fly rapidly, and in stormy weather hug closely to the water. While feeding are very active, constantly and rapidly diving one after the other—a continual disappearing and popping up.

From the following it appears that the birds nest upon both marshy and dry grounds, and in the latter case with no material except down. Audobon describes a nest found near Little Macatina, Gulf of St. Lawrence, well out upon a marsh, as snugly placed amid the tall leaves of a bunch of grass, and raised fully four inches above the roots. It was composed of withered and rotten weeds, the former being circularly arranged over the latter, producing a well rounded cavity six inches in

diameter by two and a half in depth. The borders of this inner cup were lined with the down of the bird, in the same manner as the Eider Duck's nest, and in it lay five eggs, 2.31x1.63; about equally rounded at both ends, perfectly smooth, and of a pale yellowish or cream color. "The North American Water Birds" reports that Mr. MacFarlane found the birds breeding in considerable numbers in the neighborhood of Fort Anderson, and describes a nest, containing eight eggs, found June 25th, as placed on a ridge of ground at the foot of a dry, stunted pine, made of dark colored down, being entirely concealed from view by the lower branches of the pine tree. All of the nests found appear to have been of the same style and pattern, and nothing is said of any other material than down being used in building them. The number of eggs varied from five to eight, but the latter number was found in only a single instance.

GENUS **ERISMATURA** BONAPARTE.

"Bill about as long as the head (much longer than the tarsus), very broad, widened toward the end, elevated at the base, the nostril very small, and situated very near the culmen; maxillary unguis very small, narrow and linear, the terminal half bent abruptly downward and backward, so as to be invisible from above; tail more than half as long as the wings, much graduated, consisting of eighteen very stiff, narrow feathers, with the shafts strong and rigid, and grooved underneath, toward the base; the tail coverts extremely short, scarcely covering the base of the tail; wings very short, and very concave beneath, the primaries scarcely or not at all extended beyond the tertials; tarsus very short, much less than one-half as long as the longest toe."

Erismatura rubida (WILS.).

RUDDY DUCK.

PLATE VII.

Summer resident; rare; during migration quite common. Arrive the last of March to last of April; return late in the fall.

B. 609. R. 634. C. 741. G. 299, 41. U. 167.

HABITAT. North America in general; south to Cuba and northern South America; breeding nearly throughout its range, but chiefly northward.

SP. CHAR. "*Adult male, full plumage:* Pileum and upper half of the nape uniform black; entire side of the head, below the eyes, including the malar and chin, pure white; rest of neck, entire upper parts, sides and flanks rich chestnut rufous or purplish ferruginous; wing coverts and middle of the rump dusky

grayish brown, minutely mottled with paler; remiges dull brownish dusky; rectrices brownish black, the shafts deep black; lower parts white on the surface, but the concealed portion of the feathers dark brownish gray, showing when the feathers are disarranged, and in midsummer specimens completely exposed by abrasion of the tips of the feathers; jugulum strongly washed with fulvous buff, this sometimes invading the abdomen. Lower tail coverts entirely white, to the roots of the feathers; bill and edges of the eyelids grayish blue; iris hazel; feet dull grayish blue, webs inclining to dusky; claws grayish brown. *Adult female*: Top of the head, down to below the eyes, and upper parts generally, dusky grayish brown, minutely freckled with pale grayish fulvous (more reddish on the head); remainder of the head dirty grayish white, crossed longitudinally by a stripe of speckled dusky, running from the rictus back across the auriculars, parallel with the lower edge of the brown of the top of the head; neck pale brownish gray, fading gradually into the white of the chin; lower parts, except sides and flanks (which are similar to the abdomen, but darker), as on the adult male. *Young*: Similar to the adult female. *Downy young*: Above, dark smoky brown, darker on the head; a whitish spot on each side the back; a brownish white stripe beneath the eye, from the bill to near the occiput; beneath this, a narrower dusky brown one, confluent with the brown of the nape, reaching almost or quite to the rictus; lower parts grayish white, strongly shaded with sooty brown across the jugulum."

Although the collection of the National Museum contains numerous examples of this species, only a small portion of them have the sex indicated, while on a still smaller number is the date noted. It is therefore difficult to determine satisfactorily, from the material at hand, the seasonal and sexual differences of plumage. Certain it is, however, that specimens in the plumage described above as that of the adult male in full plumage occur both in summer and winter. Audubon says that the "adult female in summer presents the same characters as the male"; but although this may very likely be true, the series under examination affords no indication of it. He describes the "male one year old" as having "a similar white patch on the side of the head; upper part of head and hind neck dull blackish brown; throat and sides of neck grayish brown, lower part of neck dull reddish brown, waved with dusky; upper parts as in the adult, but of a duller tint; lower parts grayish white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	15.25	23.00	5.80	3.60	1.26	1.60
Female . . .	14.50	21.50	5.50	3.50	1.26	1.55

This chubby little Duck has been found breeding in Guatemala, southern California, Pewaukee Lake, Wisconsin, and northward, chiefly north of the United States. During migration the birds are rather common throughout the States, arriving in small flocks.

They swim lightly, with their stiff, spine-like tails erect, or, at their pleasure, like the Grebes, can sink deep beneath the

surface. As they are not wary they are easily approached, preferring to escape by diving rather than flight. They are expert divers, and under the water at the flash of a gun, but when they do take wing, rise slowly; an easy mark for the poorest of wing shots.

They feed upon roots, seeds, and the tender stems that shoot up from the bottom, also shellfish and the various forms of life found in both shallow and deep waters, and when fat are a good table Duck.

Their nests are placed in rushes, grasses or reeds, at the margin of the water, and are made from the leaves of the plants at hand and lined with down. A set of six eggs, taken May 28th, 1886, at Santa Cruz, California, are in dimensions: 2.44x1.81, 2.50x1.80, 2.48x1.85, 2.48x1.80, 2.50x1.81, 2.44x1.82; pale cream to buff white, with a slightly granulated surface; in form, oval or rounded elliptical.

SUBFAMILY ANSERINÆ. GEESSE.

"The chief characters of the *Anserinæ*, as distinguished from the *Cygninæ* and *Anatinæ*, consists in the more elevated body, with the lengthened legs—fitting the species for a more terrestrial life, although equally able to swim. Their necks are very much shorter than in the Swans, and usually longer than those of the Ducks. From the latter all the Geese are distinguished by the character of the covering of the anterior part of the tarsus, which consists of small hexagonal scales, but in the Ducks of narrow transverse scutellæ. Including the genus *Dendrocygna*, which, notwithstanding its close superficial resemblance to the Ducks, seems to belong rather to this subfamily."

GENUS CHEN BOIE.

"Bill very robust; the culmen slightly, the lower outline of the mandible decidedly, convex; very slightly depressed immediately behind the thickened nails; commissure widely gaping (except in *C. rossi*). Head and neck of adult white; some species entirely white in adult dress, except primaries. Bill and feet reddish in the adult."

Chen cærulescens (LINN.).

BLUE GOOSE.

PLATE VII.

Migratory; rare.

B. 564. R. 590. C. 694. G. 276, —. U. —.

HABITAT. Interior of North America, east of the Rocky

Mountains; south in winter through the Mississippi valley to the Gulf coast; occasional on the Atlantic coast.

SP. CHAR. "*Adult*: Head and upper half of the neck white, or mostly white, the former frequently washed with orange rufous anteriorly; lower neck and body grayish brown, the feathers bordered terminally with paler; these pale edgings, however, nearly obsolete on the neck, where the tint is darker, inclining to plumbeous umber, which joins irregularly against the white above it. Rump and wings plain pearl gray or bluish cinereous, (the former sometimes white,) in striking contrast to the deep grayish brown of the scapulars, sides, etc.; that of the rump fading into white on the upper tail coverts, and that of the greater coverts edged externally with the same. Primaries black, fading basally into hoary gray; secondaries deep black, narrowly skirted with white; tail deep cinereous, the feathers distinctly bordered with white. Bill reddish, the commissural space black; feet reddish. *Young*: Very similar, but the chin only white, the rest of the head and neck being uniform plumbeous umber or brownish plumbeous, like the breast, only darker in shade; body more cinereous than in the adult, the pale tips to the nearly truncated contour feathers being obsolete. Rump, wings and tail as in the adult. Bill and feet blackish. *Downy young*: Not seen."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	29.00	56.00	16.50	6.00	3.00	2.20
Female . . .	27.50	53.50	15.25	5.50	2.90	2.10

In my Revised Catalogue of the Birds of Kansas, I did not include this species in the list, but said: "This bird has been dropped from the body of the A. O. U. list, and included in the hypothetical list, on account of the possibility, if not probability, that it is a colored phase of *Chen hyperborea*. The plumage of the specimens that have come under my observation in both the adult and young stages is certainly very distinct from *C. hyperborea*, and in my opinion the bird will eventually be declared a valid species, and restored to the list." I am pleased to note that Mr. Robert Ridgway, one of the members of the A. O. U. committee that prepared the list, has since, in his "Manual of North American Birds," entered it as a species; and I heartily restore it to my list.* As the birds have generally been considered the young or colored phase of the Snow Goose, which it resembles in actions and habits, but little is known with a certainty in regard to its nesting places. Mr. Ridgway says that it breeds on the eastern shores of Hudson's Bay.

* Since writing the above, the bird has been restored as a valid species, by the Council of the A. O. U., and numbered 169.1.

Chen hyperborea (PALL.).**LESSER SNOW GOOSE.**

PLATE VII.

Abundant in migration. A few occasionally linger into winter. Arrive early in March.

B. —. R. 591a. C. 696. G. 277, 42. U. 169.

HABITAT. Western North America, east to the Mississippi valley, south in winter to the Gulf coast, Lower California and northeastern Asia; breeding in high northern latitudes.

SP. CHAR. "*Adult*: Entire plumage, except the primaries, snow white; the head sometimes stained with orange rufous anteriorly; primaries deep black, fading basally into grayish, the primary coverts and alula being hoary ash. Bill purplish red, the nail whitish, and the intertomial space black; iris dark brown; eyelids whitish; feet purple or orange red, the soles dingy yellowish. *Young*: Above, including the head and neck, pale cinereous, the feathers of the dorsal region more whitish on the edges; wing coverts and tertials dark cinereous centrally, the edges broadly pure white; secondaries mottled cinereous, skirted with white; primaries as in the adult. Rump, upper tail coverts, tail and lower parts immaculate snowy white, the tail and breast tinged with pale ash. Head usually more or less tinged with orange rufous, this deepest anteriorly. Bill and feet dusky."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	29.00	56.00	16.25	6.25	3.00	2.40
Female	27.00	54.00	15.50	5.25	3.00	2.25

These birds are abundant from the Pacific to central Kansas; from there eastward decrease rapidly in numbers. They winter, in large flocks, upon the prairies of southern California and along the Gulf coast in Texas. In the fall and early spring I have seen thousands upon thousands in the Arkansas valley, in Kansas, feeding upon the growing winter wheat, doing great damage to the same, plucking the tender blades with a sudden jerk (the same as our tame Geese nip the grasses) that pulls it up when not firmly rooted. Its flesh is dark, and I do not consider it a very good table bird. In flight they are noisy, and when going any distance have a leader and fly in the form of a V.

Their nesting habits are but little known. All the descriptions that I can find were written before the more eastern bird, the Greater Snow Goose, was separated and treated as a variety, and I am, therefore, unable to give its eastern breeding

limits, or to point out any difference, if any, in its nesting habits. Mr. Ridgway says: "Eggs 3.13x2.12; breeding in Alaska." Mr. MacFarlane found the Snow Goose breeding on a small island in a lake near Liverpool Bay, Arctic coast. Their nests were placed in holes or depressions in the sand, and lined with down; they are also said to nest in marshy places. Eggs usually five to eight; cream color; in form, ovate.

GENUS **ANSER** BRISSON.

"Bill more slender, the culmen gently concave, the lower outline of the mandible slightly concave anteriorly; decidedly depressed immediately behind the rather thin nails; commissure nearly, or quite, closed by the close approximation of the tomia. Head and neck never white, and no species entirely white (normally). Bill and feet light colored, in the adult."

Anser albifrons gambeli (HARTL.).

AMERICAN WHITE-FRONTED GOOSE.

PLATE VII.

Migratory; common. Arrive in March; return in October.

B. 565. 566. R. 593a. C. 693. G. 278, 43. U. 171a.

HABITAT. North America, breeding far northward; in winter, south to Mexico and Cuba.

SP. CHAR. "*Adult*: Prevailing color brownish gray, this uniform on the head and neck, and becoming much darker on the flanks; feathers of the mantle, wings, sides and flanks distinctly bordered terminally with pale brownish ash (sometimes approaching grayish white); upper edges of the upper layer of flank feathers pure white, producing a conspicuous white stripe when the feathers are properly adjusted. Breast and abdomen grayish white, mixed more or less with irregular spots and patches of black, sometimes scattered and isolated, but oftener more or less confluent. Anal region, crissum and upper tail coverts immaculate pure white; rump brownish slate; greater wing coverts glaucous gray, tipped with white; secondaries black, their edges narrowly white; primaries slaty black, growing ashy basally; primary coverts glaucous gray. Tail brownish slate, broadly tipped with white, the feathers narrowly skirted with the same. Front of the head, from the base of the bill to about half way across the lores and forehead, including the anterior border of the chin, white, bordered behind by brownish black, which gradually fades into the grayish brown of the head and neck. Bill reddish (wax yellow, *vide* Nelson), the nail white; feet reddish. *Young*: Nearly the same as the adult, but the anterior portion of the head dark brown instead of white; wing coverts less glaucous; black blotches of the under surface absent. Nail of the bill black. *Downy young*: Above, olive green;

beneath, dingy greenish yellow, deepest yellow on the abdomen. (Hardly distinguishable from young of *Bernicla canadensis*, but apparently more deeply colored, and with greater contrast between color of upper and lower surfaces.)

“The principle variation among individuals of this species is the amount of the black blotching on the lower parts.”

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	28.50	57.50	16.75	6.00	2.85	2.15
Female	27.00	56.00	16.00	5.75	2.85	1.90

These birds are rarely met with on the Atlantic coast, but are quite common in the Mississippi valley and abundant on the Pacific slope. They prefer low, wet grounds in the vicinity of timber, or where the prairie is dotted here and there with bushes; and, while they occasionally forage off the wheat fields and other grains on the bottom lands, they seldom visit the high, dry prairies, like the Snow and Canada Geese. Their food consists chiefly of vegetable matter, tender aquatic plants the favorite, but insects, snails, frogs, etc., help to make up their diet. Their flesh is highly esteemed. The birds are shy and ever upon the lookout, and therefore not easily approached. Their manner of flight, when going a long distance, is in the form of a V, like others of the family.

They have been found breeding abundantly on the Yukon River, the Arctic coast, and on the islands in the Arctic seas. Their nest is a mere depression in the sand, worked out to fit the body, and lined with grasses, feathers and down; but little material, especially of down, used until the birds begin to set. Eggs usually five to seven. A set of three eggs, taken in northern Alaska, measure: 3.25x2.18, 3.22x2.20, 3.30x2.16; dull cream white; in form, ovate.

Mr. E. W. Nelson, in his report on the “Birds of Behring Sea and the Arctic Ocean,” says: “This is the most widely-distributed and abundant Goose throughout northern Alaska, extending its habitat across to the Siberian coast of Behring Sea; and nesting, as well, upon Saint Lawrence Island. We found it in considerable numbers at the head of Kotzebue Sound, the middle of July, 1881; and found many of the adults with their wing feathers moulted, and unable to fly, and the young still in

downy plumage at that time. It is extremely common from the mouth of the Kuskokwim River to the head of Kotzebue Sound, nesting everywhere; thence north to the extreme Arctic coast of the Territory. Wherever one goes, in suitable places, this bird is certain to be found."

GENUS **BRANTA** SCOPOLI.

"With much the same form throughout as the species of *Anser*, those belonging to the genus *Branta* are distinguished by the darker plumage, with the head and neck chiefly black, and the bill and feet entirely deep black, at all ages."

Branta canadensis (LINN.).

CANADA GOOSE.

PLATE VIII.

Common migrants. A few remain during the winter, retiring only when the extreme cold weather closes their watery resorts; leave in March.

B. 567. R. 594. C. 702. G. 279, 44. U. 172.

HABITAT. Temperate North America, breeding in the northern United States and British provinces; south in winter to Mexico.

SP. CHAR. "*Adult*: Head and neck deep black, the former with a white patch covering the throat and extending up over the cheeks to behind the eyes, growing gradually narrower above, the upper outline usually more or less truncated; this white patch, however, sometimes interrupted on the throat by a narrow black stripe or isthmus. Very rarely, a broad white band more or less distinctly indicated, crosses the forehead between the eyes. Upper surface grayish brown, varying from almost cinereous to umber, each feature bordered terminally by a paler shade; lower parts with the exposed surface of about the same shade as the tips of the feathers of the upper parts, the concealed portion of the feathers of the shade of the prevailing color above—this much exposed along the sides and on the flanks. Primaries and their coverts plain dusky, the former growing nearly black terminally. Anal region, crissum and lower tail coverts immaculate pure white. Tail plain deep black; rump plain blackish slate. Bill and feet deep black. *Young*: Similar to the adult, but the colors duller, the markings less sharply defined; black of the neck passing gradually below into the grayish of the jugulum; white cheek patches usually finely speckled with dusky; light colored tips to the contour feathers, broader. *Downy young*: Above, including an occipital patch, golden olive green; beneath, pale, greenish ochre, the head rather deeper."



PLATE VIII.

1. CANADA GOOSE; Male. 2. HUTCHINS'S GOOSE; Male. 3. BRANT; Male. 4. WHISTLING SWAN; Male. 5. WHITE-FACED GLOSSY IBIS; Male. 6. WOOD IBIS; Male. 7. AMERICAN BITTERN; Male. 8. Female. 9. LEAST BITTERN; Male. 10. Female.

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	39.50	65.50	19.50	7.40	3.60	2.40
Female . . .	36.50	63.50	18.50	7.00	3.40	1.90

These birds are more common in the Mississippi valley than elsewhere, though more evenly distributed throughout their range than others of the family; breeding from Newfoundland west to Alaska, and from about latitude 40° north to the Arctic coast; they have been found breeding in remote places farther south, but such finds are rare, and not within their natural breeding grounds.

Their flight is steady, strong and rapid, and when migrating high in the air, following their leader in a triangular form, their familiar "Honk, honk, awonk, honk," announces their arrival, and at such times the shotguns are hastily put in order, and every device possible resorted to in order to capture them for the table, and for their feathers, as well as to keep them off the growing wheat fields, where they do great injury, as they nip the blades off with a jerk that largely pulls the plants up by the roots.

The birds mate early in the season, and are true and ardent lovers, the males chivalrous and brave. During incubation and the rearing of the young, the males are as attentive as the females, sharing the duties, and proudly and courageously defending their charges.

Their nests are usually placed in a rank growth of grass on marshy grounds, and near the water; are composed of grass, weeds, or any material at hand, and lined with down; they are quite broad and bulky, but when placed on dry grounds, a mere depression lined with down. In places where greatly annoyed and robbed by predatory animals, they have been found breeding in trees, on the nests of the larger hawks, and of the Great Blue Heron, and from such places are said to carry their young to the ground in their bills, in the same manner as the Wood Duck. Eggs usually six or seven; as high as nine have been found, and in a domestic state have been known to lay as high as eleven. A set of four eggs, collected in northern Dakota, May 6th, 1880, from a nest on a small island in a lake, are, in dimensions: 3.70x2.43, 3.74x2.44, 3.80x2.45, 3.80x2.50; and in color dull white, with a faint greenish tint; in form, ovate.

Branta canadensis hutchinsii (Sw. & Rich.).

HUTCHINS' GOOSE.

PLATE VIII.

Migratory; common. A few linger into winter; leave for the north in March to middle of April; returning in October.

B. 569. R. 584*a*. C. 704. G. 280, 45. U. 172*a*.

HABITAT. Arctic and sub-Arctic America; south in winter chiefly through the Mississippi valley, and the western United States; northern Asia.

SP. CHAR. "Exactly like *canadensis* in plumage, but averaging slightly darker."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	30.00	54.50	15.75	5.50	2.90	1.45
Female . . .	26.00	51.00	14.50	4.75	2.50	1.30

These birds occur irregularly on the Atlantic coast, and are not common until the Mississippi valley is reached; from there west to the Pacific, very common. In their habits are similar to the Canada Goose, but breed farther north, chiefly within the Arctic circle; eggs usually five or six. A set of five eggs, taken in July, 1864, at Anderson River, on the Arctic coast, measure: 3.11x2.12, 3.25x2.14, 3.19x2.25, 3.26x2.12, 3.12x2.18; color dull white; in form, ovate.

Branta bernicla (LINN.).

BRANT.

PLATE VIII.

A rare, casual migrant.

B. 570. R. 595. C. 700. G. 281, 46. U. 173.

HABITAT. Northern parts of the northern hemisphere; in North America, chiefly on the Atlantic coast; very rare in the interior, or away from salt water; breeding wholly within the Arctic circle.

SP. CHAR. "*Adult*: Head, neck and jugulum continuous black, the anterior portion of the head having a brownish cast; posterior outline of the black on the jugulum very regular and sharply defined against the brownish gray of the breast. Middle of the neck with a transverse crescentic patch of white on each side, formed of white tips and sub-tips of the feathers, the black showing through in places so as to form oblique lines. Above, smoky plumbeous, the

feathers distinctly bordered terminally with a much paler and more brownish shade; wings like the back, but with a somewhat plumbeous cast, the paler margins nearly obsolete. Secondaries blackish brown; primaries brownish black; tail uniform black, but almost concealed by the snow white lengthened coverts, the upper of which, however, are invaded by a medial stripe of blackish plumbeous, brown from the rump. Breast, abdomen, sides and flanks much like the upper parts, but the light tips to the feathers whiter, broader, and more conspicuous; anal region and crissum immaculate snow white. *Young*: Similar to the adult, but the wing coverts and secondaries broadly tipped with pure white, forming very conspicuous bars; lower parts paler and more uniform; white on middle of the neck reduced to small specks."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	25.00	45.50	13.25	4.60	2.30	1.40
Female . . .	23.50	43.00	12.00	4.00	2.20	1.25

These birds are abundant on the Atlantic coast; south in winter to Florida; (two specimens taken in Kansas;) they have been found breeding from Parry's Islands, latitude 74° north, to the highest latitudes reached. During winter they collect in immense flocks, feeding at low tide upon marine plants, crustacea, etc., never diving for the same, (although they can do so when winged and hard pressed,) but procure food in shallow water by immersing the head and neck. During high water they rest out in the open bays, often going upon remote sand bars to dust their feathers; while feeding and flying are noisy, keeping up an almost continual cackle. Their flight is rather slow and very irregular, often bunching together and suddenly rising and falling as they go; even when migrating, their V-shaped form is frequently partially broken by an apparent effort to gain the leadership. These birds are sought after so much by the sportsman, as well as the gunners for the market, that they have become very wild, and are ever upon the lookout, avoiding all points of land, blinds, boats, etc., and it requires great skill and strategy to approach near enough to kill with an ordinary gun. They commence nesting in June. Sir John Ross reports finding them breeding in immense numbers on the beach of the South Cape Islands. Their nests, which thickly covered the ground, were placed on the beach, a perfect mass of down and feathers, in which three or four eggs were buried. Morris, in his "British Birds," says: "The nest of the Brant Goose is

formed of vegetable materials collected together in swampy places. The eggs are white, with a faint tinge of brown or grayish." Eggs 2.92x2.06; in form, elongate ovate.

In former days, when the ignorance, credulity and superstition of the people led them to readily believe in miraculous and fabulous stories, this species, as well as the Barnacle Goose, *Branta leucopsis*, were supposed to be engendered from barnacles attached to rotten, decaying timbers in the sea, from which they derived their name; also, by some, to grow on trees by their bills, like fruit, or mushrooms, instead of being hatched like other birds from an egg, until the exploration of the Arctic Ocean revealed their nesting places. In order that the reader may understand their reasons for so absurd and unnatural a production, I quote from three of the most noted historians and naturalists among the many writers upon the subject at the time. First, Hector Boice, a Scotch historian, born about 1465, as translated by Bellenden: "Rest now," says he, "to speak of the Geese engendered of the sea named Claiks. Some men believes that thir [these] Claiks grows on trees by the nebbis [bills]. But their opinion is vain. And because the nature and procreation of these Claiks is strange, we have made no little labour and dilligence to search the truth and verity thereof, we have sailed through the seas where thir [these] Claiks are bred, and finding by great experience that the nature of the seas is more relevant cause of their procreation than any other thing. And howbeit thir [these] Geese are bred many sundry ways, they are bred ay allanerly [only] by nature of the seas. For all trees that are cassin [cast] into the seas by process of time appears first worm-eaten, and in the small bores and holes thereof grows small worms. First they show their head and feet, and last of all they show their plumes and wings. Finally when they are coming to the just measure and quantity of Geese, they fly in the air, as other fowls do, as was notably proven in the year of our God one thousand iiii hundred lxxx, in sight of many people beside the castle of Pitslego, one great tree was brought by alluvion and flux of the sea to land. This wonderful tree was brought to the laird of the ground, quhilk [who] soon after gart

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[caused] divide it by one saw. Appeared then one multitude of worms throwing themselves out of sundry holes and bores of this tree. Some of them were rude as they were but new shapen. Some had both head, feet and wings, but they had no feathers. Some of them were perfect-shapen fowls. At last the people having ylk [each] day this tree in more admiration, brought it to the kirk of Saint Andrews, beside the town of Tyre, where it remains yet to our days. And within two years after happened such one like tree to come into the Frith of Tay beside Dundee, wormeaten and holed, full of young Geese in the same manner. Such like into the port of Leith beside Edinburgh within few years after happened such one like case. One ship named the Christopher (after that she had lain iii years at one anchor in one of thir [these] isles) was brought to Leith. And because her timber (as appeared) failed, she was broken down. Incontinent [immediately] appeared (as before) all the inward parts of her wormeaten and all the holes thereof full of Geese, on the same manner as we have shown. Attour [moreover] if any man would allege by vain argument, that this Christopher was made of such trees as grew allanerly [only] in the Isles, and that all the roots and trees that grows in the said Isles, are of that nature to be finally by nature of seas resolved into Geese; we prove the contrary thereof by one notable example, shoven afore our ene [eyes]. Master Alezander Galloway, parson of Kinkell, was with us in thir [these] Isles, giving his mind with much earnest business to search the verity of thir [these] obscure and misty doubts, and by adventure lifted up one sea tangle (*Laminaria saccharina* Lamouroux), hanging full of mussel shells from the root to the branches. Soon after he opened one of thir [these] mussel shells, but then he was more astonished than afore. For he saw no fish in it but one perfect shapen fowl small and great ay efferyng [proportional] to the quantity of the shell. This clerk knowing us right desireous of such vn-couth [uncommon] things, came hastily with the said tangle, and opened it to us with all circumstance afore rehearsed. By thir [these] and many other reasons and examples we cannot believe that thir [these] Claiks are produced by any nature of trees

or roots thereof, but allanerly [only] by the nature of the ocean sea, quhilk [which] is the cause and production of many wonderful things. And because the rude and ignorant people saw oftimes the fruits that fell off the trees (quhilkis [which] stood near the sea) converted within short time into Geese, they believed that thir [these] Geese grew upon the trees hanging by their nebbis [bills], such like as apples and other fruits hangs by their stalks, but their opinion is nought to be sustained. For as soon as thir [these] apples or fruits falls off the tree into the sea flood, they grow first wormeatin. And by short process of time are altered into Geese.”

And Wm. Turner, a distinguished English naturalist, born about 1515, in speaking of two species of Geese mentioned by Aristotle, says: “The first Goose is now by us called Brant or Bernicle, and is less than the Wild Goose, the breast being of a black and the other parts of an ashy color. It flies in the manner of Geese, is noisy, frequents marshes, and is destructive to growing corn. Its flesh is not very savoury, and is little esteemed by the wealthy. Nobody has ever seen the nest or egg of the Bernicle; nor is this marvelous, inasmuch as it is without parients, and is spontaneously generated in the following manner: When at a certain time an old ship, a plank or a pine mast rots in the sea, something like fungus at first breaks out thereupon, which at length puts on the manifest form of birds. Afterwards these are clothed with feathers, and at last become living and flying fowl. Should this appear to anyone to be fabulus, we might adduce the testimony not only of the whole people who dwell on the coasts of England, Ireland and Scotland, but also that of the illustrious histographer, Gyraldus, who has written so eloquently the history of Ireland, that the Bernicles are produced in no other way. But since it is not very safe to trust to popular reports, and as I was, considering the singularity of the thing, rather sceptical even with respect to the testimony of Gyraldus—while I was thinking over the subject—I consulted Octavian, an Irish clergyman whose strict integrity gave me the utmost confidence in him, as to whether he considered Gyraldus worthy to be trusted in what he had

written. This clergyman then professed himself ready to take his oath upon the Gospels that what Gyraldus had recorded of the generation of this bird was most true; for he himself had seen with his eyes, and also handled those half-formed birds; and he said further, that if I remained a couple of months longer in London, he would have some of them sent to me."

And Dr. Jerome Cardam, a celebrated Italian scholar and physician, born about 1551, after visiting Scotland to investigate the matter, reached the same conclusion, and in summing up, as if to remove all doubts, remarks that the circumstance that the Hebridian Sea should engender Geese "is not a whit more marvelous than that mice, on the authority of Aristotle, are generated from the ground, or that the soil of Egypt should grow hares and goats, inasmuch as nature always produces what is most suitable to a place."

SUBFAMILY CYGNINÆ. SWANS.

"Neck extremely long (as long as, or longer, than the body); size very large; bill longer than the head, the edges parallel, the nail small; tarsi shorter than middle toe; lores naked; tail feathers 20 to 24; color chiefly, or entirely, white (except in *Chenopisatrata*, the Black Swan of Australia)."

GENUS OLOR WAGLER.

"Neck very long (longer than the body), bill longer than the head (commis-
sure longer than the tarsus), widening slightly to the end, the edges straight; basal portion of the bill covered by a soft skin, extending over the lores to the eye, the upper line running nearly straight back from the forehead to the upper eyelid, the lower running from the eye obliquely downward, in a nearly straight line, to the rictus. Nostrils situated a little posterior to the middle of the maxilla, and quite near the culmen; no trace of a knob or caruncle at base of the bill. Lower portion of the tibia bare; tarsus much shorter than middle toe (but little longer than the inner), much compressed, covered with hexagonal scales, which become smaller on the sides and behind. Hind toe small, much elevated, the lobe narrow. Tail very short, rounded or graduated, of twenty to twenty-four feathers. Wings rounded, the second and third quills longest; primaries scarcely reaching beyond the ends of the secondaries. Color entirely white, the sexes alike. Young, pale grayish."

Olor columbianus (ORD.).

WHISTLING SWAN.

PLATE VIII.

Migratory; rare. Arrive the middle of March; begin to return in October.

B. 561*a*. R. 588. C. 689. G. 274. 47. U. 180.

HABITAT. North America in general; breeding far northward; south in winter to California and the Gulf coast; casual west to the Commander Islands, Kamtchatka; accidental in Scotland.

SP. CHAR. "Tail usually of twenty feathers; bill not longer than the head. *Adult*: Entire plumage pure white; the head (sometimes the neck, or even entire under parts) tinged with rusty. Bill, tarsi and feet deep black, the bare loral skin usually marked by an oblong spot of orange or yellow (dull pale reddish, yellowish or whitish in the skin); iris brown. *Young*: Light plumbeous, paler beneath, the fore part and top of the head tinged with reddish brown. Bill reddish flesh color, dusky at the tip; feet dull yellowish flesh color or grayish.

"The principal anatomical character of this species is the disposition of the trachea in the sternum, it making but one horizontal turn upon itself at the point farthest from its entrance in the front of the enlarged carina."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	55.00	80.00	22.00	8.75	4.30	4.20
Female . . .	53.00	75.00	20.00	7.00	4.20	4.10

This species is rarely met with on the Atlantic coast north of Chesapeake Bay, but it is not uncommon throughout the interior and on the Pacific coast. I have one in the "Goss Ornithological Collection," shot March 12th, 1875, in the Neosho valley, Kansas, out of a flock of six, and I have occasionally seen these birds in the State during migration; and I once saw a few in winter, on Galveston Bay, near the mouth of Trinity River; they were in company with, or rather near, a flock of the Trumpeters, and readily known by their smaller size.

Their food consists of grasses, leaves and roots of various water plants; also snails, insects and other forms of life. They cannot dive, but are able, with their long necks, to feed in quite deep waters. While feeding, as well as in flight, they are quite noisy, and their loud-toned notes are occasionally heard during the night.

In olden times, when credulity largely prevailed among the people, the most fabulous and absurd stories were readily believed. The Swans were supposed to sing sweetly, especially when dying. This belief seems to have been based upon the fable, that the soul of Orpheus was transmigrated into a Swan, and for this reason these birds were held in great veneration. The Greek and Latin poets praised its song, and the philosophers and historians recorded it as a fact. I quote from three

of the most noted. Socrates says: "When Swans perceive approaching death, they sing more merrily than before, because of the joy they have in going to the God they serve." Aristotle says: "Swans are wont to sing, particularly when about to die." And Cicero says of Lucius Crassus, that "He spake with the divine voice of a Swan about to die." Pliny, one of the first to doubt, says: "Some affirm that Swans sing lamentably a little before death, but untruly, I suppose, for experience in many has shown the contrary."

Their flight is rapid and well sustained, and, when migrating, very high in the air, in a triangular form. While not quite as swift as the Trumpeter, it is estimated to fly in a calm, or with a favorable wind, about one hundred miles an hour. On the ground they are not very graceful, but on the water a picture of grace and ease; when on the lookout, carry their necks erect, but when they think they are unobserved, as well as during courtship, bend their necks in wavy, graceful curves, and, with partially raised feathers, arched wings, and head drawn down and back as if ready for a charge, swiftly and stately glide before each other, and in various ways make the greatest display possible, not only before their mates, but to gratify an unbounded vanity; for they are very proud birds and are conscious of their good looks. During courtship the males have many a hard fight for their lady love, but once mated, are true and devoted to each other, the males sharing in the duties of hatching, and in rearing the young; and in the defense of the same display extraordinary courage, boldly attacking an enemy, and, with furious strokes of their powerful wings, compel a hasty retreat. These birds have been found breeding from the Yukon and Anderson rivers, north along the coast, and upon the islands in the Arctic sea. Their nests are placed on marshy grounds near the water's edge, are very large, and built of reeds, rushes, bog moss, or any material at hand, and lined with down, with which the eggs are also covered. Eggs five to seven. A set of two, taken by Mr. MacFarlane, July 5th, 1864, on an island in Franklin Bay, are, in dimensions: 4.07x2.63, 4.14x2.67; dull white, with a buffy tint; in form, oval.

Olor buccinator (RICH.).

TRUMPETER SWAN.

Migratory; not uncommon. Arrive about the first of March.

B. 562. R. 589. C. 688. G. 275, 48. U. 181.

HABITAT. Chiefly the interior of North America, west to the Pacific coast, but rare or casual on the Atlantic; south in winter to California and the Gulf coast; breeding from Iowa and Idaho north, to within the Arctic circle.

SP. CHAR. "Tail of usually twenty-four feathers; bill longer than the head. *Adult:* Plumage entirely pure white, the head, sometimes the neck also or even the entire lower parts, tinged with rusty. Bill, naked lores, legs and feet uniform deep black; iris brown. *Young:* In winter the young has the bill black, with the middle portion of the ridge to the length of an inch and a half light flesh color, and a large elongated patch of light dull purple on each side; the edge of the lower mandible and the tongue dull yellowish flesh color. The eye is dark brown. The feet are dull yellowish brown, tinged with olive; the claws brownish black; the webs blackish brown. The upper part of the head and the cheeks are light reddish brown, each feather having toward its extremity a small oblong whitish spot, narrowly margined with dusky; the throat nearly white, as well as the edge of the lower eyelid. The general color of the other parts is grayish white, slightly tinged with yellow; the upper part of the neck marked with spots similar to those on the head.

"The arrangement of the trachea in this species is very different from that in *O. columbianus*, in having, besides the horizontal bend, a vertical flexure, occupying a prominent protuberance on the anterior portion of the dorsal aspect of the sternum.

"Total length, about 58.50 to 68.00 inches; extent, about 8.00 to nearly 10.00 feet; wing, 21.00 to 27.25 inches; culmen (from frontal feathers), 4.34 to 4.70; tarsus, 4.54 to 4.92; middle toe, 6.00 to 6.50."

This large, graceful bird, whose loud clarion voice announces its presence, is similar in habits to the Whistling Swan. It is one of the first migrants to reach its breeding grounds. Lays from five to seven eggs, of a dull white color with a buff discoloration. A set of two eggs, collected by Mr. MacFarlane, at Franklin Bay, Arctic coast, measure: 4.43x3.06, 4.51x2.88; in form, oval.

ORDER HERODIONES.

HERONS, STORKS, IBISES, ETC.

"Neck and legs much lengthened. Hind toe much lengthened, and inserted at the same level as the anterior toes (shorter and slightly elevated in *Ciconiidae*). Habits altricial, and young dasypædic; palate desmognathous; carotids double."

SUBORDER IBIDES. SPOONBILLS AND IBISES.

Sides of upper mandible with a deep narrow groove extending uninterruptedly from the nostrils to the tip. (*Ridgway*.)

FAMILY IBIDIDÆ. IBISES.

"Wading birds of medium to rather large size, the bill much elongated, attenuated, more or less, toward the end, and bent downward, more or less decidedly, in sickle fashion, like that of the curlews (*Numenius*). Nostrils sub-basal, latero-superior, with more or less of a membrane above and behind; nasal fossæ continued forward to the very extremity of the maxilla in the form of a deep, narrow continuous groove. Hallux almost incumbent; claws slender, projecting far beyond the ends of the toes."

GENUS PLEGADIS KAUP.

"Bill shallow through the base, moderately tapering, and gently curved; the base not trued, and the basal outlines of the maxilla deeply concave; bare portion of the tibia equal to or longer than outer toe; middle toe about three-fourths the tarsus; inner toe reaching past the subterminal articulation of the middle toe; hallux about equal to the basal phalanx of the inner toe; forehead and orbital, malar and gular region completely feathered, the lores only being naked, the feathering on the chin forming an acute angle which advances to as far as the middle of the nostrils; feathers of the pileum elongated, lanceolate, and distinct, forming, when erected, a sort of full, rounded crest; those of the occiput and nape, and upper half of the neck all round, also distinct and lanceolate; plumage chiefly metallic green above; the adults with head and upper part of neck chestnut, and lower parts chestnut or violet blackish; the young with head and upper part of neck streaked grayish brown and white, the lower parts grayish brown or violet dusky."

Plegadis guarauna (LINN.).

WHITE-FACED GLOSSY IBIS.

PLATE VIII.

A rare visitant. Shot at a lake near Lawrence, by Mr. W. L. Bullene, in the fall of 1879, and reported to me by Prof. F. H. Snow, who has the specimen in the State University; and a young female was captured October 17th, 1890, on the Arkan-

sas River, near Wichita, and kindly sent me for identification, by Dr. R. Matthews, of that city.

B. 500a. R. 504. C. 650. G. 234. 49. U. 187.

HABITAT. Western United States, from Texas to California, north to Oregon; accidental to Kansas, south through tropical America to Chili.

SP. CHAR. "*Adult*: Feathers bordering the base of the bill all round whitish, usually most distinct on the forehead. Pileum dull metallic violet purple, changing to green, the feathers blackish beneath the surface; rest of the head cinnamon brownish, paler on the throat, where lightest anteriorly; neck cinnamon chestnut, the feathers blackish beneath the surface, this showing where the feathers are disarranged, and quite conspicuous on the nape, where the dusky has in certain lights a faint greenish luster; lower neck, entire lower parts (except the crissum, anal region, axillars and flanks), back, anterior scapulars and lesser wing coverts uniform rich chestnut, darker and more purplish above, lighter and more ferruginous or clearer reddish beneath. Rest of the plumage glossy metallic green, bronze purple and violet; the green purest and clearest on the primaries; the secondaries and greater coverts more bronzy, the middle coverts and posterior half of lesser covert region purplish, changing to dull green; the crissum and rump mixed green and purple, the green being of a richer (almost grass green) shade, especially on the rump; axillars and under wing coverts bronze purple; under surface of remiges and rectrices very highly burnished; bill dusky, sometimes tinged with reddish; lores, eyelids and naked skin of chin lake red or pale carmine; iris crimson; legs and feet varying from grayish brown to deep lake red. *Young, second year*: Head, neck and lower parts dull grayish brown, the head and upper parts of the neck streaked with white; back grayish brown with green or purplish reflections. Otherwise as in the adult, but metallic colors less brilliant. *Young, first year*: Head, neck and lower parts as in the last, but upper parts and under side of the wing uniform, continuous bronzy green, with little (if any) admixture of purple or violet shades. No chestnut on the lesser wing coverts; bill pale greenish horn blue, blackish terminally and dusky basally; iris hazel; legs and feet deep black. *Downy young*: Bill light yellowish, the base, end and band around the middle deep black; lores blackish; legs and feet black; forehead black, bounded posteriorly by a crescentic patch of dull silvery white, extending from eye to eye, across the posterior portion of the crown; the line of demarcation between the white and black being somewhat mixed or suffused with light rufous; rest of head, neck and lower parts covered with soft downy feathers of a uniform brownish gray shade, without any whitish streaks on head and neck. Partially complete plumage of the upper surface entirely uniform continuous bronze green, or metallic bottle green, without the slightest admixture anywhere of purple, blue or violet."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	24.50	37.50	10.50	4.50	4.00	5.75
Female	22.00	35.50	9.50	4.00	3.50	4.75

The plumage of this elegant wader is glossed with a metallic luster that richly shines with different hues in the varying shades of light; a most beautiful sight to the close observer, but at a distance its resplendent colors are not discernable and it appears to be a plain, blackish bird, and is generally known as the Black Curlew. In habits they are gregarious, frequenting low, moist grounds and the edges of lakes and pools of water. Their food consists largely of crawfish, snails, insects and various low forms of life; minnows and frogs also help to make up their bill of fare.

In flight their legs and necks are stretched out to their fullest extent. They rise in confusion, but when going any distance quickly form abreast, and fly in a wavy line, high, swift and strong, occasionally sailing as they go, and in alighting, abruptly break the line in as wild confusion as in forming the same.

The birds are quite common during the breeding season along the Gulf coast of Texas, and westward to the Pacific coast, wintering chiefly in southern Mexico and northern Central America. I found them wintering in large flocks on the marshy and overflowed grounds along the Rio de Santiago, long before it enters and after it leaves Lake Chapala, Mexico; and June 30, 1878, I had the pleasure of finding a flock breeding in company with the White, Louisiana and Night Herons, on a small, boggy island in Lake Surprise, on Smith's Point, Galveston Bay. I was too late for their eggs, only finding here and there a rotten one; the young birds were about two-thirds grown, blackish little fellows, that when closely approached awkwardly scrambled from their nests, which were made of stems bitten off from the rushes, cane and flag leaves, loosely placed upon the tops of the dense growth of tall rushes that were rather ingeniously bent and woven together as a foundation. Eggs usually three, 2.10 x 1.44; greenish blue; in form, pointed oval.

SUBORDER CICONIÆ. STORKS, ETC.

Sides of upper mandible without any groove. Hind toe inserted above the level of the anterior toe; claws broad and flat, resting on a horny pad or shoe, the middle one not pectinated. (*Ridgway.*)

FAMILY **CICONIIDÆ**. STORKS AND WOOD IBIS.

"Large, Heron-like birds, with the bill much longer than the head, thick through the base, and more or less elongate conical; the nostrils sub-basal, more or less superior, and bored into the bony substance of the bill, without overhanging or surrounding membrane; maxilla without any lateral groove. Legs covered with small longitudinal hexagonal scales; claws short, depressed, their ends broad and convex, resting upon horny, crescentic 'shoes;' hallux with its base elevated decidedly above the base of the anterior toes."

SUBFAMILY **TANTALINÆ**. WOOD IBIS.

"Bill elongated, subconical, subcylindrical, the end attenuated and decurved, with the tip rounded; nostrils decidedly superior; toes long, the middle one one-half or more the length of the tarsus; lateral toes unequal, the outer decidedly longer than the inner; claws moderately lengthened, rather narrow, claw-like."

GENUS **TANTALUS** LINNÆUS.

"Large, Stork-like birds, with long legs, neck and beak, the latter attenuated and decurved terminally, much as in the true Ibises. Bill much thickened at the base, both vertically and laterally, much attenuated terminally, where almost abrupt, but not greatly decurved. Nostrils bored directly into the bony substance of the bill, the maxilla destitute of any trace of a nasal groove. Legs covered with small longitudinal hexagonal scales. Toes long, very slender, the middle one about or little more than half the length of the tarsus, the outer one reaching to the middle of the subterminal phalanx of the middle toe, the inner much shorter, not reaching the subterminal articulation of the middle toe; hallux about equal to the inner toe and claw; bare portion of the tibia longer than the middle toe, the upper third or more without scales, and smooth; web between the inner and middle toes well developed, but smaller than the outer web. Plumage compact above, loose below; the feathers of the neck small, their webs somewhat decomposed. Remiges well developed, the tertials reaching to the end of the primaries, the latter hard, concave beneath, the outer four with their inner webs deeply sinuated at or anterior to the middle portion; second, third and fourth quills nearly equal, or longest. Tail short (shorter than bill or tarsus), even, of twelve broad, stiff feathers. Adult with the whole head and upper half of the nape bare, covered with hard, scurfy and more or less corrugated skin. Young with the whole head and neck, except the chin and forehead, feathered."

Tantalus loculator LINN.

WOOD IBIS.

PLATE VIII.

Irregular summer visitant; rare. Dr. George Lisle wrote me, in the spring of 1883, that he had noticed the birds a few times on the flats east of Chetopa, and that Albert Garrett killed a very fine specimen there about six years ago; and Dr. Lewis

Watson, of Ellis, informs me that one put in an appearance March 26th, 1885, and stayed about his premises on the creek for several days.

B. 497. R. 500. C. 648. G. 233, 50. U. 188.

HABITAT. The whole of tropical and warm temperate America; casually northward to New York, Wisconsin, Utah and Nevada.

SP. CHAR. "*Adult*: Head and upper half of the neck naked, and covered with hard, scurfy skin of a dusky color; the vortex covered by a somewhat shield-shaped horny plate of a lighter color; the neck with transverse, somewhat ovate, bark-like, rugose scales. Plumage in general uniform white, the primary coverts, remiges and rectrices black, with metallic purple, bronze and green reflections. Bill dusky yellowish brown, the edges yellow; sides of the head dark bluish purple, upper part of the head horn color or dull grayish yellow, the rest of the bare skin of the same tint, many of the scales anteriorly blue; iris deep brown, at a distance seeming black; tibia and tarsus indigo blue; toes above black, on the lateral and hind toes, however, many of the scutellæ bluish gray; the webs pale yellowish flesh color; claws black. *Young*: Head and neck covered with rather scant, somewhat woolly, feathers, excepting the forehead, anterior part of the crown, lores, anterior portion of malar region, chin and anterior part of throat, which are covered with a smooth skin. Head and neck grayish brown, darkest on the occiput (where dark sooty), growing gradually paler below. Rest of the plumage as in the adult, but the black feathers of wings and tail less metallic. *Immature*: Head bare and corrugated, as in the adult; neck feathered as in the young.

"Wing, 17.60 to 19.50; tail, 6.10 to 7.30; culmen, 7.55 to 9.30; depth of bill through nostril, 1.55 to 1.90; tarsus, 7.00 to 8.50; middle toe, 3.85 to 4.30; bare part of tibia, 5.00 to 6.25; weight, 11¼ lbs.; total length, 44½ inches; extent of wing, 62 inches."

A male in the "Goss Ornithological Collection" measures:

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	38.50	70.50	19.00	7.10	8.00	9.00

These birds are quite a common resident in all the Gulf States, and on the Colorado and Gila Rivers, in the near vicinity of Fort Yuma, and in suitable locations I have found them abundant in Mexico and Central America. During the breeding season they assemble in large flocks, but scatter more or less after, when it is not uncommon to find a solitary bird upon its feeding grounds or perched upon the dead limb of one of the tallest trees in the vicinity.

Their food consists of fishes, crabs, crawfishes, frogs, young alligators, and the small forms of life that inhabit or hide in mud at the bottom of the shallow lagoons, stagnant streams and pools of water upon the overflowed lands, and which the birds unearth by scratching with their feet as they slowly move along; and when the flocks are large, or the pools small, the water is soon roiled up thick and muddy, causing the fishes to come to the surface for air, where they are rapidly killed with a stroke of the bill. At such times the slaughter is often greater than their appetites demand, and hundreds are left floating—food for the gulls and other scavengers of the waters.

These birds rise from the ground in a heavy, awkward manner, with head down and legs dangling, but once fairly in the air, they are stretched out in line with the body; in flight they are strong and easy, flapping and sailing as they go, often circling to great heights, especially during the extreme heat of the day; when, after satisfying their hunger, they love to leave the hot, low lands and sail in a cooler strata of air, often a mere speck in the sky and at times wholly lost to sight.

Their nests are placed on the trees growing in the swamps and low lands; a platform of sticks and twigs, loosely arranged, and lined with mosses or soft material at hand. Eggs usually three, of a dull white color, but often more or less soiled. According to measurements as given by other writers, they vary greatly in size. A set taken May 14th, 1876, in Brevard county, Florida, measure: 2.66 x 1.85, 2.66 x 1.90, 2.70 x 1.88; white, stained with specks of dull yellowish brown; in form, oval. The nest was upon a limb thirty feet from the ground, made of sticks and lined with leaves and moss.

SUBORDER HERODII. HERONS, EGRETS, BITTERNS, ETC.

Hind toe inserted on the same level with the anterior toes; claws narrow, arched, the under surface free, the middle one with its inner edges distinctly pectinated. (*Ridgway*.)

FAMILY ARDEIDÆ. HERONS, BITTERNS, ETC.

“Altricial waders, having the bill compressed, pointed, all the outlines nearly straight; the lores and orbits naked; the rest of the head (except, sometimes, the malar region, or part of the throat) feathered, the occiput frequently

with ornamental plumes. Lower part of the neck, back or scapulars frequently with ornamental plumes. Plumage generally handsome and variegated. Two to three pairs of powder-down tracts. Other characters variable."

SUBFAMILY BOTAURINÆ. BITTERNS.

"Outer toe decidedly shorter than the inner. Claws long, slender, slightly curved. Two pairs only of powder-down tracts. Rectrices very short, soft, only ten in number."

GENUS BOTAURUS HERMANN.

"Medium-sized or rather large Herons, with the plumage much mottled or striped with different shades of brown and ochraceous (the plumage essentially the same in both sexes and at all seasons); the plumage, particularly of the lower neck in front, exceedingly soft and full, and destitute of any ornamental plumes; the bill comparatively small and short (shorter than the middle toe); the tibia almost completely feathered, and the claws very long and but slightly curved. Tail of ten short, soft feathers, slightly rounded or nearly even.

"Bill gradually tapering from the base to the point, the upper outline more convex than the lower, the gonys very slightly convex and gently ascending, the lower edge of the maxillary rami perfectly straight; mental apex extending forward about half way from the center of the eye to the point of the bill, and slightly in advance of the anterior end of the nostril; malar apex falling far short of that of the frontal feathers. Toes very long, the middle one considerably exceeding the bill and almost equal to the tarsus; inner toe decidedly longer than the outer; hallux about half the middle toe; claws very long (that of the hallux nearly equal to its digit), and but slightly curved; bare portion of the tibia shorter than the hallux. Tarsi with large, regular scutellæ in front.

"Only two American species are known, both very distinct."

SUBGENUS BOTAURUS.

Size large (wing more than 9.50); sexes alike in coloration, and young not obviously different from adults. (*Ridgway.*)

Botaurus lentiginosus (MONTAG.).

AMERICAN BITTERN.

PLATE VIII.

Summer resident; common. Arrive the last of April to first of May; begin laying about the 20th of May; remaining occasionally until late in the fall.

B. 492. R. 497. C. 666. G. 231, 51. U. 190.

HABITAT. The whole of temperate and tropical North America, south to Guatemala, West Indies and Bermudas.

SP. CHAR. "*Adult:* Ground color of the plumage ochraceous buff; but this densely mottled and finely sprinkled above with reddish brown and blackish, the latter color prevailing on the dorsal and scapular regions, where the feathers have lighter edges, the buff prevailing on the wing coverts, where the varie-

gation consists of a finer and sparser sprinkling of the dusky and brown; on the tertials and ends of the secondaries, the reddish (a sort of cinnamon shade) forms the ground color, and is thickly sprinkled with irregular dusky dottings and zigzags; pectoral tufts nearly uniform dark brown, the feathers with broad lateral borders of clear yellowish ochraceous; pileum rusty brown, darker anteriorly, changing gradually backward into the greenish olive gray of the nape; sides of the head and neck yellowish ochraceous; a malar stripe of dark ferruginous, changing posteriorly into a very conspicuous stripe of blue black (or in some specimens dull grayish) down each side of the neck (the stripes are almost obsolete on a female in the 'Goss Ornithological Collection' shot at Neosho Falls, Kansas, August 17th, 1875); chin and throat white, with a very narrow medial dusky streak, suffused with ochraceous; foreneck pale buff, with sharply defined stripes of cinnamon brown edged with a black line; lower parts pale buff, with narrower brownish stripes; tibiae and crissum plain light creamy buff, primary coverts and primaries dark slate, tipped with pale reddish ochraceous, finely, but not densely, sprinkled with dusky; upper mandible olivaceous black, the tomium (broadly) lemon yellow; lower mandible pale lemon yellow, deeper basally, with a stripe of dusky brownish along the posterior part of the tomium; lores and eyelids lemon yellow, the former divided longitudinally by a medium stripe of dusky olive, from the eye to the base of the upper mandible; iris clear light sulphur yellow next the pupil, shading exteriorly into orange brownish, this encircled narrowly with black; legs and feet bright yellowish green; claws pale brown, dusky toward points. *Young:* Similar to the adult, but more reddish, the mottling coarser, and with a tendency to form ragged transverse bars, especially on the posterior upper parts."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	27.00	43.50	11.25	4.00	3.60	3.00
Female . . .	25.00	41.00	10.25	3.50	3.50	2.80

This widely-distributed species inhabit the moist lands, marshes and bogs. A wild, solitary bird, nocturnal or rather crepuscular in habits, resting during the day hidden in the tall grasses, reeds and rushes; and its presence is not generally known, save to those familiar with its loud, booming note, "Pump-a-lunk," occasionally heard during the early breeding season, and to the hunter or occasional visitant of its secluded and uninviting haunts; and as the birds skulk and hide, only taking wing when suddenly started, or forced to do so, they are usually thought to be rare in localities where in fact they are quite common. When frightened, these birds rise with a guttural "Kawk," and at all times in a loose, awkward manner, with dangling legs and outstretched neck, but when flying any distance the head is drawn down close to the breast, and the legs stretched out in

line with the body; in this way they flap slowly and easily along. They leave their hiding places at the approach of night, and I have occasionally found them searching for food during the day, in cloudy, rainy weather. Their food consists of minnows, field mice, frogs, tadpoles, crawfish, insects and other small forms of life; and as evidence of their destructive habits I will say, that I found in the craw and stomach of one, shot beside a small pool of water upon overflowed land, twenty-two sun fish, averaging a little over an inch in length.

Their nests are placed on the ground, in low, marshy places, built upon hummocks in the thick-growing water grasses or upon the tops of old, broken-down rushes, quite bulky, composed of small sticks, weeds and grasses, or of rushes bitten off, about fifteen inches in length, and loosely woven together. Eggs said to be three to six (I have never found over four in a nest), 2.00x1.48; brownish drab; in form, oval.

SUBGENUS ARDETTA GRAY.

"Extremely small; differing from the true Bittern chiefly in their diminutive size, and in the fact that the sexes differ in color."

***Botaurus exilis* (GMEL.).**

LEAST BITTERN.

PLATE VIII.

Summer resident; common. Arrive the last of April to first of May; begin laying the last of May; return early in September.

B. 491. R. 498. C. 667. G. 232. 52. U. 191.

HABITAT. The whole of temperate North America, and tropical America to Brazil.

SP. CHAR. "*Adult male:* Pileum, including slight occipital crest, with entire back, scapulars, rump and tail, glossy greenish black, the outer webs of the outer row of scapulars edged with pale buff, forming a narrow longitudinal stripe. Sides of the head and neck bright ochraceous, deepening into reddish chestnut at the nape; chin, throat and foreneck paler, the first sometimes whitish, with a medial series of dusky and yellowish buff dashes; the foreneck and jugulum faintly striped with white and pale orange buff, the latter predominating; on each side the breast a patch of maroon dusky, the feathers tipped with paler and suffused with blackish, forming tufts of large, loose feathers, partly concealed by the large feathers of the jugulum; lower parts whitish, washed with pale creamy buff. Carpal region, greater wing coverts, lower webs of ter-

tials and tips of primary coverts, secondaries and inner primaries rich cinnamon rufous; large area covering middle wing covert region pale ochraceous or buff; remiges and primary coverts blackish slate, except the tips; bill dark olive brown above, edges of upper mandible and bare frontal space yellow, lower mandible pale yellow, inclining to flesh color; iris yellow; feet dull greenish yellow; claws brown. *Adult female*: Similar to the adult male, but the greenish black replaced by brown (varying from umber drab to cinnamon, the pileum darker and usually opaque blackish dusky); the buff stripe along the outer border of scapulars much broader and more conspicuous, and the stripes on the foreneck (usually, but not always) more distinct. Otherwise exactly like the male. *Young*: Similar to the adult female, but the feathers of the back and scapular region tipped with buff; the stripes on the foreneck also (usually) more distinct."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	14.00	18.00	4.80	1.85	1.75	1.80
Female . . .	13.00	17.00	4.30	1.60	1.65	1.70

This miniature species has fully as wide and extended a distribution as the American Bittern; but being more strictly a nocturnal bird, inhabiting the almost inaccessible swamps and boggy lands that are covered with a dense growth of canes, reeds and rushes, it is seldom met with. When startled it utters a low "Gua," and in daylight flies but a short distance, in a weak, uncertain manner, but at dusk it flaps along direct, easy and strong, with neck drawn in and legs extended. It subsists upon the various forms of insect life, snails, small frogs, tadpoles, minnows, etc.

Their nests are placed in rushes and coarse, tall, cane-like water grass—a platform about eighteen inches from the ground, or water, made of the stems and leaves woven in and around the standing, growing stalks. Eggs usually four, 1.25 x .98; white, with a faint greenish-blue tinge; in form, rounded oval.

SUBFAMILY ARDEINÆ. HERONS AND EGRETS.

"Outer toe equal to, or decidedly longer than, the inner. Claws usually short, generally strongly curved. Three pairs of powder-down tracts. Rectrices lengthened, stiffish, twelve in number."

GENUS ARDEA LINN.

"Herons of largest size (of Stork-like nature), the adults distinguished by lengthened, narrowly lanceolate, acute jugular and scapular plumes (the former rather rigid, the latter overhanging the wings and rump); a tuft of broad feathers on each side the breast (having a different color from adjacent parts), and,



PLATE IX.

1. GREAT BLUE HERON; Male. 2. AMERICAN EGRET; Male. 3. SNOWY HERON; Female. 4. LITTLE BLUE HERON; Female. 5. Juv. Male. 6. GREEN HERON; Female. 7. BLACK-CROWNED NIGHT HERON; Male. 8. Juv. Female. 9. YELLOW-CROWNED NIGHT HERON; Male. 10. Juv. Male.

in the breeding season, by the presence of two extremely lengthened, narrow, pendent, occipital plumes; culmen almost straight; gonys ascending, more or less convex, about equal in length to the mandibular rami; upper and lower outlines of the bill parallel for the basal half. Mental apex anterior to half way between point of bill and anterior angle of the eye; frontal apex a little posterior to the nostrils and slightly anterior to the malar apex;* middle toe more than half the tarsus, and about equal to bare portion of the tibia; outer toe reaching to about the middle of the penultimate phalanx of the middle toe; inner toe decidedly shorter, reaching only to the second articulation of the middle toe; hallux a little longer than the basal phalanx of the outer toe; claws rather short, strongly curved; front of tarsus with broad, transverse scutellæ, in single series, for upper half; pileum crested, the middle feathers of the crown and occiput being elongated, lanceolate, and decurved; primaries reaching decidedly beyond the tertials; second, third and fourth quills nearly equal, and longest—first longer than fifth; inner webs of outer three slightly sinuated near ends."

SUBGENUS ARDEA.

Culmen decidedly shorter than tarsus, the latter more than one and a half times as long as the middle toe without claw; wing more than 17.00. Adult with sepular plumes narrowly lanceolate, with compact webs; head crested, the occiput during pairing season with two or more long, slender, compactly-webbed plumes; plumes of lower neck stiffened, narrowly lanceolate, or acicular. (*Ridgway*.)

Ardea herodias LILL.

GREAT BLUE HERON.

PLATE IX.

Summer resident; quite common along the streams. Arrive early in March; begin laying the last of March.

B. 487. R. 487. C. 655. G. 224, 53. U. 194.

HABITAT. North America, from the Arctic regions southward into northern South America, Bermudas, West Indies and Galapagos.

SP. CHAR. "*Adult*: Length about 42.00 to 50.00; extent 72.00; weight 5 to 8 pounds. Forehead and central feathers of the crown pure white; sides of crown and whole of the occiput, including the long plumes, blue black. Chin, throat and malar region pure white. Neck lavender gray, fading gradually above into the white of cheeks and throat. Foreneck with a narrow medial series of black and ferruginous dashes mixed with white; lower neck plumes pale lavender gray. Lateral jugular tufts uniform blue black; breast and abdomen black, almost uniformly laterally, but the middle feathers with broad medial stripes of white. Crissum white, the feathers sometimes edged with rufous. Tibial feathers deep chestnut rufous, not growing conspicuously paler toward the body. Upper parts fine slate blue, the dorsal and scapular plumes paler, more pearl

*The terms "mental apex," "malar apex," and "frontal apex" are here employed to denote the apices, or points, of the feathering of the head at the base of the bill.

gray, the lightness of the tint proportionate to the length of the plume; remiges black, the inner secondaries growing gradually more slaty, so that the innermost are scarcely darker than the tertials. Tail deep slate blue, a shade darker than the tertials. Entire border of the wing, from the armpit to the metacarpophalangeal joint, rich purplish rufous, scarcely mixed anywhere with white, and much the widest at the bend. Bill olive above, the culmen blackish; lower mandible wax yellow, brighter terminally (sometimes wholly yellow); iris bright yellow; bare loreal space cobalt blue in spring, olive green or yellowish after breeding season. Legs and feet dusky black throughout. *Young:* Above slate gray (less bluish than in the adult), destitute of any pencillate plumes; anterior lesser wing coverts bordered terminally with light rufous; border of the wing (broadly) white, more or less tinged with rufous, especially at and near the bend, where this color prevails. Entire pileum, including all the occipital feathers, blackish slate, with a narrow median crest of more elongated, dark-colored feathers with pale fulvous shaft streaks. Cheeks dark grayish; malar region, chin and throat only, pure white. Neck dull gray, sometimes tinged with rufous, some of the feathers with indistinctly lighter shaft streaks; foreneck with a narrow longitudinal series of black, rufous and whitish dashes, much as in the adult. Breast and abdomen broadly striped with dark cinereous white, in nearly equal amount (sometimes suffused with rufous). Tibiæ very pale rufous, sometimes almost white; crissum white. Upper mandible black, paler or horn color along the tomium, lower pale pea green, deepening into clear horn yellow on terminal half; eyelids and horizontal space on lore light apple green; iris gamboge yellow; tibiæ and soles of toes apple green; rest of legs and feet black. *Seasonal variations:* Although the plumage of this species is essentially the same throughout the year, there are certain differences depending on the season, which are worthy of note. In the spring, or at the commencement of the breeding season, the bill, except on the culmen, is almost entirely yellow (generally a wax yellow-brighter on the lower mandible), and the bare orbital space cobalt blue, while from the occiput grow two long, slender, pendent black plumes. After the young are hatched, these plumes are dropped, the bare skin around the eye has changed to a yellowish green hue, and the upper mandible become almost wholly dusky blackish olive, with only the tomia and lower mandible yellowish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	45.00	71.50	19.25	7.50	7.25	6.00
Female . . .	43.00	69.00	18.25	7.00	6.75	5.50

These birds are quite common in suitable localities, and breed nearly throughout their range; a hardy species, that only leave their northern resorts as the ice closes their natural feeding grounds. They are solitary and silent except during the breeding season, and even then are not social, though often nesting in communities and with others of the family; they seem to have no interest in common, only coming together because the location suits them, and at such times fight fiercely

for a favorite branch or place for a nest; while mated, however, the pairs are true to each other, and share alike in the duties of nest building, hatching and rearing the young. The latter is a laborious work, and requires constant labor during the day and way into the night, even where food is abundant, for their growth is rapid and digestive organs great; but when they have only their own appetites to satisfy they generally feed at morn and eve, resting during the day in swampy lands and treetops skirting the waters.

Their food consists chiefly of fishes, which they usually secure by standing motionless in the water, with bill poised, patiently awaiting their near approach, when they are pierced with a rapid stroke of the bill, and quickly swallowed, head foremost. They also feed on frogs, meadow mice—in fact upon all small forms of digestible life.

These birds have great strength of wing, and their flight in migration is high and protracted; at other times, unless going a great distance, they flop leisurely along near the water or land. In flight the head is drawn back upon the breast, with legs extended rudder-like, in line with the body.

Their nests are placed on the branches of high trees, growing upon swampy lands and along the streams; in localities destitute of trees, upon bushes, rocks and the ground; in all cases a flat, bulky structure of sticks, lined sparingly with grasses. Eggs three to six, usually four; pale greenish blue; varying somewhat in size; in form, rather elliptical oval. A set of four, taken April 12th, 1881, on an island in Nueces Bay, measure: 2.40x1.75, 2.60x1.86, 2.65x1.80, 2.65x1.86.

SUBGENUS HERODIAS BOIE.

“White Herons of large size, and without plumes, except in the breeding season, when ornamented simply (in most species) by a long train of straight feathers, with thick shafts, and long, sparse, decomposed, slender barbs, which grow from the dorsal region and overhang the tail. Bill moderately slender, the upper and lower outlines almost parallel to near the end, where gently curved, the culmen more abruptly so than the gonys, though the curve is quite gradual. Mental apex reaching a point about midway between the tip of the bill and the eye; malar apex decidedly anterior to the frontal apex, and extending to beneath the posterior end of the nostrils. Toes very long, the middle one about two-thirds the tarsus, the hallux much less than one-half the former.

Tibiæ bare for about half their length, or for about the length of the middle toe. Anterior scutellæ of tarsus large, distinct and nearly quadrate. Nuptial plumes, confined to the anterior part of the back, whence spring numerous long, straight and thick shafts, reaching, when fully developed, to considerably beyond the end of the tail; each stem having along each side very long, slender and distant fibrillæ. Tail even, of twelve broad feathers. Lower nape well feathered. Plumage entirely pure white at all stages and seasons."

***Ardea egretta* GMEL.**

AMERICAN EGRET.

PLATE IX.

Summer visitant; not uncommon. Arrive from the south in July and August; return in September.

B. 486, 486a. R. 489. C. 658. G. 225, 54. U. 196.

HABITAT. Nearly the whole of America; north casually to the British Provinces, south to Chili and Patagonia; West Indies.

SP. CHAR. "Color entirely pure white at all seasons and at all ages. Bill and lores rich chrome yellow, the latter sometimes tinged with light green; the culmen usually black near the tip, sometimes nearly the entire maxilla black; iris Naples yellow; legs and feet entirely deep black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	39.50	57.00	14.75	6.25	6.50	4.50
Female . . .	38.00	55.00	14.00	6.00	5.75	4.25

This delicate wader, though quite a summer wanderer, prefers a warm climate and the seaboard for its home. They breed in suitable localities throughout the Gulf States, and on the Pacific slope north into Oregon. The stragglers north of their breeding grounds are chiefly young birds, that soon realize their mistake and hasten south on the first approach of cold weather.

These birds, as far as my observation goes, appear to be strictly diurnal, and appear to have their favorite resting places, which they leave at early daylight for their feeding grounds, where they feed and rest alternately during the day.

Their food, manner of flight, and habits generally, are similar to the Great Blue Heron, though not as solitary and quarrelsome; and, while I have found them nesting in tall trees and upon broken-down reeds and rushes, they seem to prefer low bushes and dry spots of ground, in retired and almost inaccessible places.

Their nests are usually made of sticks and slightly lined with grasses. Eggs two to four; pale bluish green; in form, oval to elliptical oval. The dimensions of two sets of eggs, of four each, collected April 5th, 1881, on a small island in Nueces Bay, Texas, are as follows: 2.30x1.66, 2.12x1.58, 2.20x1.68, 2.24x1.70; and 2.29x1.61, 2.30x1.70, 2.34x1.70, 2.34x1.68. The nests were upon the ground, and partially hidden by straggling weeds and grass. Other Herons, also Terns, were nesting upon the island.

SUBGENUS GARZETTA KAUP.

"Adult with occipital, jugular and scapular plumes greatly developed, with much decomposed webs, the scapular plumes extending to or beyond the tail and recurved tips; color always entirely pure white."

Ardea candidissima GMEL.

SNOWY HERON.

PLATE IX.

Summer visitant; not uncommon. Arrive from the south in July and August; return in September.

B. 485. R. 490. C. 659. G. 226, 55. U. 197.

HABITAT. The whole of temperate and tropical America, from the northern United States to Chili; West Indies. A summer or autumnal visitant at the northern and southern extremes of its range.

SP. CHAR. "Color entirely pure white at all ages and seasons. Bill black, the basal portion of the lower mandible (sometimes one-half) yellow or light colored; lores, iris and eyelids yellow; tibiae and tarsi black, the lower posterior portion of the latter, with the toes, yellow; claws blackish. Nuptial plumes slender, shafted, and loose fibered, those of the back reaching to or slightly beyond the end of the tail, and, normally, recurved terminally; those of the occiput sometimes exceeding the bill in length; those of the jugulum slightly less developed. In the young these are all absent, except on the occiput, where they are but slightly developed; in the adults the occipital plumes appear to be permanent, the others assumed only during the breeding season."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	25.00	39.00	10.25	4.00	4.00	3.35
Female . . .	22.50	37.00	9.50	3.50	3.80	3.20

This beautiful diurnal species is quite social, and can be seen at all seasons of the year in flocks, that scatter more or less

during the day but assemble in large numbers at their roosting places and breeding grounds. They are more restless than the larger species, rise lighter, strike quicker on the wing, and are a less patient watcher for their prey, preferring in shallow water to give chase, partially raising their wings as they run, and a flock so engaged, darting here and there after a school of small fishes, is a lively and exciting sight. Eggs usually four; pale greenish blue; in form, oval to elliptical oval. A set collected April 27th, 1882, near Corpus Christi, Texas, from a nest built of weeds and grass on the top of a low, flat cactus, are in dimensions: 1.68x1.27, 1.70x1.26, 1.71x1.28, 1.73x1.30.

SUBGENUS FLORIDA BAIRD.

"Small Herons, dark plumbeous, with maroon-colored necks; bluish white, with bluish tips to some of the primaries; or with the plumage variously intermediate between these extremes. Bill slender, acute, appreciably curved toward the tip, the culmen somewhat depressed just above the anterior end of the nostril; lower edge of the mandibular rami slightly concave, the gonys nearly straight, but ascending; anterior point of the malar feathers reaching just about as far forward as that of the frontal feathers, and very far posterior to the posterior end of the nostril; anterior point of chin feathers almost directly beneath the anterior end of the nostril and a little over two-thirds the distance from the middle of the eye to the point of the bill. Toes long, the middle one two-thirds or more as long as the tarsus, the hallux a little less than half its length; bare portion of the tibia considerably less than the middle toe. Tarsal scutellæ as in *Garzetta* and *Herodias*.

"Nuptial plumes (occipital, jugular and scapular) long, slenderly lanceolate, the webs rather compact, especially those of the dorsal region; those of the back reaching, when fully developed, far beyond the tail."

Ardea cœrulea LINN.

LITTLE BLUE HERON.

PLATE IX.

Summer visitant; rare. Arrive from the south in July and August; return in September.

B. 490. R. 493. C. 662. G. 227. 56. U. 200.

HABITAT. The whole of tropical and warm temperate North America, except western United States; casually north to Massachusetts, Illinois, Kansas, etc.; south throughout the West Indies to Colombia and Guiana.

White Phase.

SP. CHAR. "*Adult*: Prevailing color white, with the ends of several outer primaries plumbeous, the plumage tinged here and there (in quantity varying with the individual) with delicate pale bluish pearl gray. Colors of the soft parts as in the blue adult. *Young*: Similar to the adult, but with the plumes absent or but slightly developed. Bill pale lilaceous, becoming gradually black on terminal third; legs and feet uniform pea green, lighter and brighter than in the blue phase; iris Naples yellow."

Blue Phase.

"*Adult*: Head and neck rich purplish maroon, with a glaucous cast, the feathers more chestnut beneath the surface; rest of the plumage uniform dark bluish plumbeous, the plumes with a glaucous cast, the maroon and plumbeous gradually blended. In breeding season, bill ultramarine blue at the base, the end black; lores and eyelids ultramarine blue; iris pale yellow; tibiae, tarsi and toes black. In autumn, bill light plumbeous on the basal half, the terminal half black; lores and eyelids very pale dull greenish; iris sulphur yellow; legs and feet uniform pea green, darker at the joints. *Young*: Similar in color to the adult, with less-developed plumes or with none at all; the head and neck more plumbeous."

Pied (or Intermediate) Phase.

"The plumage mixed white and plumbeous, in proportion varying with the individual, forming a series connecting unbrokenly the two extremes described above."

(The above description of the adult "white" and "blue phases" is the present accepted one, but from my observation I have been led to think that the white phase, and those undergoing the changes in color, are young birds that, when *fully* matured, will be found invariably dressed in the blue attire. I know that the birds occasionally breed in their various stages of color, and so do quite a number of land and water birds, before they assume their *final* dress. If a mere phase in color, we ought to find young birds *blue* as well as white, and they may have been so found, but not among the hundreds that I have met with, both in and out of their nests, and I do not know of a naturalist that claims to have seen one in the blue dress. It is therefore my opinion that the description under the heads of "white phase" and "pied or intermediate phase," should only be accepted as descriptive of the young and immature, or not fully developed birds.)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	23.00	40.00	10.20	4.25	3.75	3.00
Female . . .	21.50	37.00	9.50	4.10	3.50	2.80

These birds are quite numerous in Florida and the adjacent isles, and not uncommon west along the Gulf coast and in Central America, where I have occasionally met with them upon both coasts, and far inland along the streams that I visited. They are quite social and diurnal in their habits, collecting together in large flocks at their roosting and breeding places. For feeding grounds they seem to prefer the margins of inland streams and ponds of shallow water, where they patiently watch for hours, or slowly move along with a dignified tread, striking swiftly and with unerring aim at their prey, occasionally giving chase, but in this respect they are not as much of a success as the Snowy. These birds rise into the air with a bound, and from the start flap swiftly and easily away.

Their nests are placed on trees, bushes and cactus; a flat, loose structure built of small sticks, with a mixture of leaves, moss and grass. Eggs usually three or four; dark bluish green; in form, rather elongated oval. A set collected April 29th, 1874, on the south coast of Florida, from a nest on the branches of a low tree, are in dimensions: 1.65x1.32, 1.68x1.32, 1.72x1.30, 1.72x1.34.

SUBGENUS BUTORIDES BLYTH.

Adult with scapular plumes and feathers of top of head moderately lengthened, lanceolate, soft, and with compact webs; jugular plumes broad, soft and blended; color never white. (*Ridgway.*)

Ardea virescens LINN.

GREEN HERON.

PLATE IX.

Summer resident; abundant. Arrive about the middle of April; begin laying about the first of May; remain until late in the fall.

B. 493. R. 494. C. 663. G. 228, 57. U. 201.

HABITAT. The whole of temperate North America, West Indies, Bermudas; north into Maine, Dakota and Oregon; south into Venezuela and Colombia, South America.

SP. CHAR. "*Adult*: Entire pileum, including occipital crest, glossy dark metallic bottle green; rest of the head and neck, except throat and foreneck, rich chestnut, varying from a cinnamon shade to a fine purplish maroon; bare

orbital space bordered posteriorly with greenish black, from the lower part of which projects backward from the rictus a short stripe of the same; below this, along the upper edge of the malar region, a narrow stripe of white, the lower malar feathers being mixed black and rufous, forming another stripe; throat and foreneck, from chin to jugulum, white, marked with broad longitudinal dashes of dusky. Lower parts ash gray, the lining of the wing somewhat spotted, and distinctly bordered, outwardly, with creamy white. Scapular plumes glaucous plumbeous, with a green reflection in certain lights, the shafts white. Wing coverts and rectrices brilliant metallic bottle green, the former distinctly bordered narrowly with fulvous white; these borders on the lesser coverts more rusty or fulvous; rectrices immaculate bottle green; remiges and primary coverts plumbeous, with a green reflection, the inner primaries and adjoining secondaries with narrow crescentic tips of white, the coverts with terminal deltoid spots of the same. Bill deep black, the lower mandible sometimes partly yellowish or greenish; lores and orbits varying from olive green to bright yellow; iris gamboge yellow; legs and feet olive green or olive yellow, the scutellæ more greenish; claws horn color. *Young:* Pileum, including crest, as in the adult, but usually streaked with dark rusty anteriorly; sides of the head and neck dull dark rusty, indistinctly streaked with light ochraceous or buff; lower parts white, tinged with buff and striped with dusky. Back scapulars and rump uniform dull dusky green, some of the feathers indistinctly bordered with rusty; wings and tail as in the adult, but light borders to larger wing coverts more ochraceous, and the two or three middle rows marked with medial wedge-shaped dashes of the same. Bill lighter colored than in the adult, dull greenish prevailing, only the culmen dusky, the lower mandible mostly pale yellowish; legs and feet dull greenish yellow or olivaceous."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	19.00	28.00	7.50	3.00	2.10	2.55
Female . . .	18.00	26.00	7.00	2.80	1.85	2.40

This widely-distributed and common species is a summer resident, in suitable localities, throughout the northern portion of the Union; wintering in the Southern States and southward, where it also breeds. A graceful little beauty, but for some unknown reason is in bad repute, hooted at and stoned by the boys and called bad names; it may be because it destroys daily many of the finny tribe, but in this respect does not differ from the family of which it is one of the least, and not near as destructive at the artificial fish ponds as the Night Heron, that during the night visits with noiseless wing the ponds and fountains in the very heart of the city, where it feeds undisturbed, and as silently wings itself away.

These birds are not shy, and, where not persecuted, very easily approached. Their feeding habits are similar to those of the

Great Blue, but more strictly a nocturnal bird; seldom found in large flocks, and, though found breeding in rookeries, the mated pair as a rule prefer to nest alone.

Their nests are placed on the branches of trees and bushes skirting the streams and ponds, and are loosely made of sticks, and lined with twigs in leaf. Eggs four or five; average dimensions of three sets, two of four and one of five, 1.52x1.10; light greenish blue; in form, oval to elliptical oval.

GENUS **NYCTICORAX** STEPHENS.

"Medium-sized Herons, of very short, thick build, large, thick heads, and short tarsi. The plumage exceeding different in the adult and young, but the sexes similar. Adults with two or three exceedingly long, thread-like, white occipital plumes.

"Bill very stout, the depth through the base being more than one-fourth the culmen; the latter nearly straight for the basal two-thirds, then gently decurved to the tip; lower edge of the mandibular rami nearly straight; gonys nearly straight, very slightly ascending; maxillary tomium decidedly concave, with a convex outline just forward of the rictus. Frontal apex reaching more than half way from the center of the eye to the point of the bill and to beyond the anterior end of the nostril; malar apex falling a little short of the frontal apex. Tarsi a little longer than the middle toe, its scutellæ hexagonal in front; lateral toes nearly equal, but the outer the longer; hallux less than half the middle toe; bare portion of tibia shorter than the hallux. Inner webs of two outer primaries distinctly emarginated near the end. Tail of twelve broad, moderately-hard feathers, as in the typical Herons."

SUBGENUS **NYCTICORAX**.

Culmen about as long as the tarsus; gonys nearly straight, and lateral outlines of bill slightly concave; tarsus but little longer than middle toe; scapulars broad, blended. (*Ridgway*.)

Nycticorax nycticorax nævius (Bodd.).

BLACK-CROWNED NIGHT HERON.

PLATE IX.

Summer resident; not uncommon. Arrive from the first to the middle of April; begin laying about the middle of May; return by the first of November.

B. 495. R. 495. C. 664. G. 229, 58. U. 202.

HABITAT. Nearly the whole of America except the Arctic regions.

SP. CHAR. "*Adult*: Pileum, scapulars and interscapulars glossy blackish bottle green; forehead, postocular, malar and gular regions and medial lower parts white; lateral lower parts and neck, except in front, pale ash gray, with a

slight lilaceous tinge; wings, rump, upper tail coverts and tail deeper ash gray. Occipital plumes pure white. Bill black; lores and orbit yellowish green; iris bright red; legs and feet yellow; claws brown. *Young, second year:* Similar to the adult, but scapulars and interscapulars cinereous like the wings, and the white of the forehead obscured by the blackish of the crown; the colors generally more somber, with neck and lower parts more decidedly ashy. *Young, first year:* Above, grayish brown, with more or less of a cinnamon cast, especially on the remiges, each feather marked with a medial tear-shaped or wedge-shaped stripe of white, the remiges with small white terminal spots; rectrices plain ash gray. Sides of the head and neck and entire lower parts striped longitudinally with grayish brown and dull white; chin and throat plain white medially. Bill light apple green, the upper half of the maxilla blackish, the mandible with a tinge of the same near the end; lores light apple green; eyelids similar, but brighter, more yellowish, their inner edge black; iris dark chrome yellow or dull orange; legs and feet light yellowish apple green; claws grayish horn color."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	26.00	46.50	12.25	5.25	3.20	3.00
Female . . .	25.00	45.00	11.50	4.75	3.00	2.90

This species has the most extended distribution of any of the family; breeding south of the northern regions into southern South America. These birds live together in societies, and assemble in large numbers at their breeding grounds and roosting places, where they sleep and rest during the day, sallying forth at dusk for their feeding grounds, uttering as they go an occasional hollow, guttural "Qua," and, for this habit, are generally known as the "Qua-bird." They seldom feed by daylight, except while rearing their young, when the clamor for food demands their almost constant attention.

Their food consists of fishes, frogs, crustacea, and most small forms of life in the shallow waters, swamps and marshy ground. While feeding these birds move with a slow, stately tread, with body bent and head drawn back, ready for a quick and unerring stroke at their prey.

Their manner of flight is similar to that of the family, but flap of wings is at all times noiseless.

Their nests are placed on trees, bushes, broken-down reeds and rushes. I found, April 12th, 1881, a small flock nesting on the dry, hard ground, under a few low bushes and weeds, upon a small island in Nueces Bay, Texas; no nests, only a slight lining of grasses. In trees and bushes, they build on the

branches a loose, flat structure of sticks. Eggs usually four; 2.00x1.50; pale greenish blue; in form, oval to elliptical oval.

SUBGENUS NYCTHERODIUS REICHENBACH.

Culmen much shorter than tarsus (only a little longer than middle toe); gonys convex, and lateral outlines of bill straight, or sometimes perceptibly convex; tarsus much longer than middle toe; scapulars lengthened, narrow (but not pointed), somewhat loosely webbed. (*Ridgway.*)

Nycticorax violaceus (LINN.).

YELLOW-CROWNED NIGHT HERON.

PLATE IX.

Summer resident; rare. Arrive the first to middle of April; begin laying about the middle of May.

B. 496. R. 496. C. 665. G. 230. 59. U. 203.

HABITAT. The whole of tropical and subtropical America, including the West Indies; breeding regularly north into Kansas, Missouri, Illinois, Indiana and North Carolina; and wander casually to Massachusetts, Pennsylvania and Colorado. (I can find no mention of these birds in California, but as they are found along the Pacific coast, as well as eastward in Central America and Mexico, I am inclined to think they may have been overlooked, or at least that they will be occasionally found along the Colorado River, in the vicinity of Fort Yuma.)

SP. CHAR. "*Adult*: Forehead, middle of crown and long occipital plumes, with a large longitudinal patch from the rictus to the ears, pure white; rest of the head deep black. Plumage in general, clear plumbeous blue, or cinereous, lighter beneath (the degree of blueness probably depending on the age of the bird); all the feathers of the upper surface marked with a medial stripe of black; the secondaries and rectrices dark plumbeous, bordered with a lighter shade of the same; primaries plain bluish plumbeous. Bill deep black, the lower basal portion of the mandible, in some specimens, greenish yellow; lores and eyelids greenish yellow; iris pale orange; legs dull yellowish green; the large scutellæ and the claws dusky. *Young*: Above, dark sooty grayish brown, sometimes of a slightly olive cast, the feathers of the pileum and wings (in youngest individuals the entire upper surface?) marked with medial streaks of white or pale buff, these streaks assuming on the wing coverts a narrow euneate form. Lower parts soiled whitish, striped with brownish gray. Bill greenish black, the lower and basal part of the lower mandible greenish yellow, as are the eyelids and bare space before the eye. Iris pale orange. Legs and feet dull yellowish green, the scutellæ and scales in front, as well as the claws, dusky."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	24.00	44.00	12.25	4.75	3.80	2.90
Female . . .	22.00	42.00	11.75	4.30	3.60	2.50

This southern form does not appear to be nearly as common within its range as the Black-crowned, which it closely resembles in habits, though more diurnal, slower in flight, and less easy to approach.

Their nests are placed on trees and bushes, a loose flat structure of sticks. Eggs three to five, 1.95x1.42; pale yellowish to greenish blue; in form, oval to elliptical oval. A set of three, taken June 12th, 1884, near the mouth of the Colorado River, Texas, from a nest composed of sticks and grasses, in a small tree, about ten feet from the ground, are in dimensions, small, viz.: 1.94x1.39, 1.94x1.38, 1.94x1.39.

ORDER PALUDICOLÆ.

CRANES, RAILS, ETC.

"Hind toe small and elevated (but neck much lengthened and bill strong and hard) in *Gruidæ*; lengthened and incumbent in *Armidæ* and *Rallidæ*. Wings comparatively short and rounded, and body compressed (except in *Gruidæ*). Habits præcocial, and young dasypædic. Palate schizognathous. Carotids double."

SUBORDER GRUES. CRANES.

"Size large; head partly naked (except in young) or with ornamental plumes; middle toe less than half the tarsus; hallux small, much elevated."

FAMILY GRUIDÆ. CRANES.

"Characters same as those given for suborder."

GENUS GRUS PALLAS.

"Bill lengthened, straight, the upper mandible only slightly decurved at the extreme tip; the commissure and other outlines straight. Nasal groove very large and open, extending over the basal two-thirds of the bill. Nostrils broadly open, pervious; the anterior extremity half way from the tip of the bill to eye. The upper half of the head naked, warty, but with short hairs.

"Legs much lengthened; toes short, hardly more than one-third the tarsus. Inner toe rather longer, its claw much larger than the outer. Hind toe elevated, short. Toes connected at base by membrane. Tarsi broadly scutellate anteriorly. Tertials longer than primaries, decurved; first quill not much shorter than second. Tail of twelve feathers."

Grus americana (LINN.).

WHOOPIING CRANE.

Migratory; rare. Arrive about the middle of March to first of April; return in October, a few remaining until about the middle of November.

B. 478. R. 582. C. 668. G. 272, 60. U. 204.

HABITAT. Interior of North America, north into the British possessions, south to Florida and Central Mexico.

SP. CHAR. "*Adult*: Whole crown and occiput covered with a warty or granulated skin, almost bare on the occiput, but covered anteriorly by black, hair-like bristles; the color of this skin reddish, in life. Lores and malar region, including a narrow angular strip extending from the latter down each side of the throat, also naked and similarly bristled, the bristles denser anteriorly. Color entirely pure white, excepting the primaries and their coverts, which are uniform slate black, and a patch of plumbeous on the upper part of the nape, adjoining the bare skin of the occiput and extending downward for the distance of about two inches. Bill wax yellow; iris gamboge yellow; bare skin of head dull orange color; legs blue black. *Young*: Head completely feathered. General color white, with large patches here and there, especially above, of light cinnamon, the head and neck almost continuously of this color. The primaries and their coverts uniform dull black, as in the adult. Bill dull wax yellow, the terminal portion blackish; legs and feet blackish. *Immature*: Bare portion of the head indicated by feathers of a harsher texture and darker color than elsewhere, occupying the areas which are naked in the fully adult. Plumage much stained with pale cinnamon, as in the first plumage."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	52.00	92.00	23.50	9.50	12.00	6.05
Female...	49.00	89.00	22.00	8.50	11.25	5.50

These birds breed in suitable locations, from central Illinois, north into the fur regions, chiefly along our northern borders, in Iowa, Minnesota and Dakota, to Slave Lake. They do not inhabit the Pacific coast, and I can find no mention of their presence west of the Rocky Mountains.

These birds are very wary and ever upon the lookout, rising over every suspicious spot when on the wing, and when on the ground spring into the air at the first sight or appearance of danger, with a warning note to others. In flight, their long necks and stilt-like legs are stretched out in line with the body to their full extent, moving strongly, with slowly-beating wings, but not swiftly; I say strongly because they are able to face a strong wind, and to sustain themselves for a long time in the air, often circling spiral-like to a great height. They occasion-

ally bunch up, and I have seen them in a triangular form, but, as a rule, they travel in single file, following their leader in a wavy line, croaking as they go, like hounds upon a cold trail.

In their habits are very social, and I have often noticed them playfully hopping about, but never had the pleasure of witnessing their mating or amorous dance, but presume it does not differ much, if any, from that of the Sandhill, which I have watched with interest on several occasions. When asleep or at rest usually stand on one leg, with the other drawn up close to the body and the head back upon the breast.

In their food habits omnivorous, feeding freely upon the various kinds of grains, vegetables, plants, bulbous roots, worms, reptiles, mice, grasshoppers, etc.

Eggs two, light brownish drab, sparsely marked, except about the larger end, with irregular spots and blotches of pale chocolate brown, and obscure shell stains of sepia; the shell is rough, with numerous little wart-like elevations; in form, oval to elliptical oval. A set taken May 2d, 1882, in Franklin county, Iowa, from a nest placed in a swail, and made of flags and rushes, a platform raised a little above the water, are, in dimensions: 4.01 x 2.60, 4.08 x 2.66.

***Grus canadensis* (LINN.).**

LITTLE BROWN CRANE.

Migratory; not uncommon. Arrive in March; return the last of October. Omitted from catalogues by oversight.

B. 480. R. 584. C. 669. G. —, —. U. 205.

HABITAT. Northern North America; breeding from Hudson's Bay and Alaska north to the Arctic coast; migrating south through western United States, east of the Rocky Mountains, into Mexico.

SP. CHAR. "*Adult*: Entire pileum, including lores, covered with a bare granulated skin (reddish in life), interspersed with scattered, fine, blackish hairs; the posterior margin of this bare skin divided medially on the occiput by an angular projection of the feathers on the upper part of the nape. General color of the plumage continuous and nearly uniform plumbeous gray, this frequently stained or overlain in places by a rusty wash; the primaries slate colored, with whitish shafts. Cheeks and throat sometimes distinctly whitish. Legs and feet blackish; bill blackish, paler at tip; iris crimson. *Young*: Head entirely feathered. Plumage much as in the adult, but of a lighter and more brownish gray, and always conspicuously stained, especially on upper parts, with tawny cinnamon or ferruginous."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	41.50	75.00	19.50	7.75	8.50	4.40
Female . . .	37.50	72.50	18.00	6.50	7.50	3.80

This small species has until of late been classed with *G. mexicana*, and supposed to be an immature bird; but its smaller size, and the failure to find any indications of intergradations, together with its marked difference in distribution, entitle it to rank as a valid species. In habits it is not noticeably different.

Mr. Nelson, in his report, "Natural Historical Collections in Alaska," between the years 1877 and 1881, says the birds arrive in the Territory, as a rule, from the 10th to the 15th of May; mate and commence laying the last of the month. Eggs two; and describes their nests and eggs as follows: "The site for the nest is usually on the grassy flats, where the dryer portions, or the slight knolls, afford them suitable places. The spot usually has an unobstructed view on all sides, and it is common to see the female's long neck raised suspiciously at the appearance in the distance of anything unusual. . . . The nest is frequently a mere hollow in the ground and is commonly lined with more or less coarse grass stems and straws. In one instance a nest was found on a bare flat, and was lined with a layer of straws an inch deep, all of which must have been brought for some yards; this is unusual, however. The eggs vary in ground color from pale greenish clay color to buffy brown or warm brownish, and the entire surface is irregularly marked with spots and blotches of chocolate brown, rather sparsely distributed at the small end, but numerous about the large end of the egg, chiefly at the very apex. The size varies from 3.70 by 2.40, 3.72 by 2.40, 3.71 by 2.41, representing the maximum, to 3.26 by 2.28, 3.40 by 2.35, 3.33 by 2.21, representing the minimum, in a series of twenty-five specimens."

***Grus mexicana* (MULL.).**

SANDHILL CRANE.

Migratory; common. Arrive about the middle of March to first of April; return early in October; a few occasionally remain as late as November 20th.

B. 479. R. 583. C. 669. G. 273, 61. U. 206.

HABITAT. North in the British possessions to Manitoba, but chiefly within the United States, and west from the Mississippi valley to the Pacific coast, south into central Mexico, and eastward along the Gulf coast to Florida and Georgia, breeding in suitable localities nearly throughout its range.

SP. CHAR. "Exactly like *G. canadensis* in plumage, but much larger in size."

Length, 40.00 to 48.00; wing, 21.00 to 22.50 (21.83); culmen, 5.15 to 6.00 (5.47); depth of bill at base, .95 to 1.10 (1.01); tarsus, 9.90 to 10.65 (10.25); middle toe, 3.40 to 3.60 (3.50); bare part of tarsus, 4.60 to 5.00 (4.78). (*Ridgway.*)

*These birds, in their habits, are similar to the Whooping, but much more numerous. Their loud, modulating, sonorous croak announces their presence, and is often heard during the night as well as by day.

During courtship and the early breeding season, their actions and antics at times are ludicrous in the extreme, bowing and leaping high in the air, hopping, skipping and circling about with drooping wings and croaking whoop, an almost indescribable dance and din, in which the females (an exception to the rule) join, all working themselves up into a fever of excitement, only equaled by an Indian war dance, and, like the same, it only stops when the last one is exhausted. *

Eggs two. A set collected May 25th, 1880, near Jamestown, Dakota, from a nest on a marsh in a tall growth of rushes, a level platform about three feet in diameter, made of flags, leaves and rushes, are, in dimensions: 3.68x2.25, 3.82x2.40; ground color pale olive buff, spotted and splashed with sepia brown and purple shell stains, thickest at larger end; in form, elliptical oval.

SUBORDER RALLI. RAILS, GALLINULES, COOTS, ETC.

"Size small or medium; head normally feathered or with a frontal shield; middle toe nearly as long as the tarsus; hallux well developed (nearly as long as the first joint of the middle toe), nearly incumbent."

FAMILY RALLIDÆ. RAILS, GALLINULES AND COOTS.

"Small or medium sized wading or swimming birds, with compressed body, very long toes, which are sometimes (in the Coots) lobed along the edges, short, rounded, concave wings, and very muscular thighs.

"The brief diagnosis given above is sufficient to distinguish the Rails, of whatever subfamily, from the Courlans and Cranes, their only near allies. The

typical Rails (*Rallinæ*) are of very small to medium size, the typical genus (*Rallus*) being characterized particularly by a lengthened, slender bill, while other genera, *Porzana* and *Crex*, have this member comparatively short and thick. The Coots and Gallinules have the base of the culmen continued upon the forehead, where it widens out into a more or less gibbous or expanded plate or frontal shield. The Coots, however, are peculiar in having the toes fringed with scalloped flaps or lateral lobes."

SUBFAMILY RALLINÆ. RAILS.

"No frontal process; toes without lateral lobes; size variable; bill sometimes much elongated."

GENUS *RALLUS* LINNÆUS.

"Bill longer than the head, rather slender, compressed; upper mandible slightly curved; nostrils in a long groove, and with a large membrane; wings short; tertiary quills long, frequently longer than primaries; tail very short, legs moderate; tarsus shorter than middle toe, and covered on all sides with transverse scales; toes long and rather slender; inner toe rather shorter than the outer; hind toe short and weak.

"This genus contains numerous species, inhabiting all the temperate countries of the world, and very similar in their habits, and frequently in appearance. Their long toes enable them to run over and climb among aquatic plants with great facility."

Rallus elegans AUD.

KING RAIL.

PLATE X.

Summer resident; common in suitable localities throughout the State. Arrive the first to middle of April; begin laying about the middle of May; return by the last of October.

B. 542. R. 569. C. 676. G. 267, 62. U. 208.

HABITAT. Fresh water marshes of the eastern, southern and middle United States, west into Colorado, north casually to Maine, Canada West, Wisconsin, Minnesota and Dakota.

SP. CHAR. "*Adult*: Above, yellowish olive or ochraceous drab, very conspicuously and sharply striped with black; crown dark brown; a supraloral streak of brownish white continued to the occiput in a broader stripe of brownish gray; lores and suborbital region brownish gray, or dull brownish; chin and throat white; remainder of head and neck, including jugulum and breast, light cinnamon; flanks and sides dark brownish or blackish dusky barred with white, the white bars averaging about .10 to .15 of an inch in width, the interspaces more than twice as wide; crissum mixed dusky and white, the lateral feathers almost immaculate white; middle of the abdomen considerably lighter than the breast, sometimes quite white; axillars and lining of the wing similar to the flanks, but white bars narrower and less distinct. Wing coverts rusty brownish, sometimes inclining to chestnut, and not infrequently more or less barred

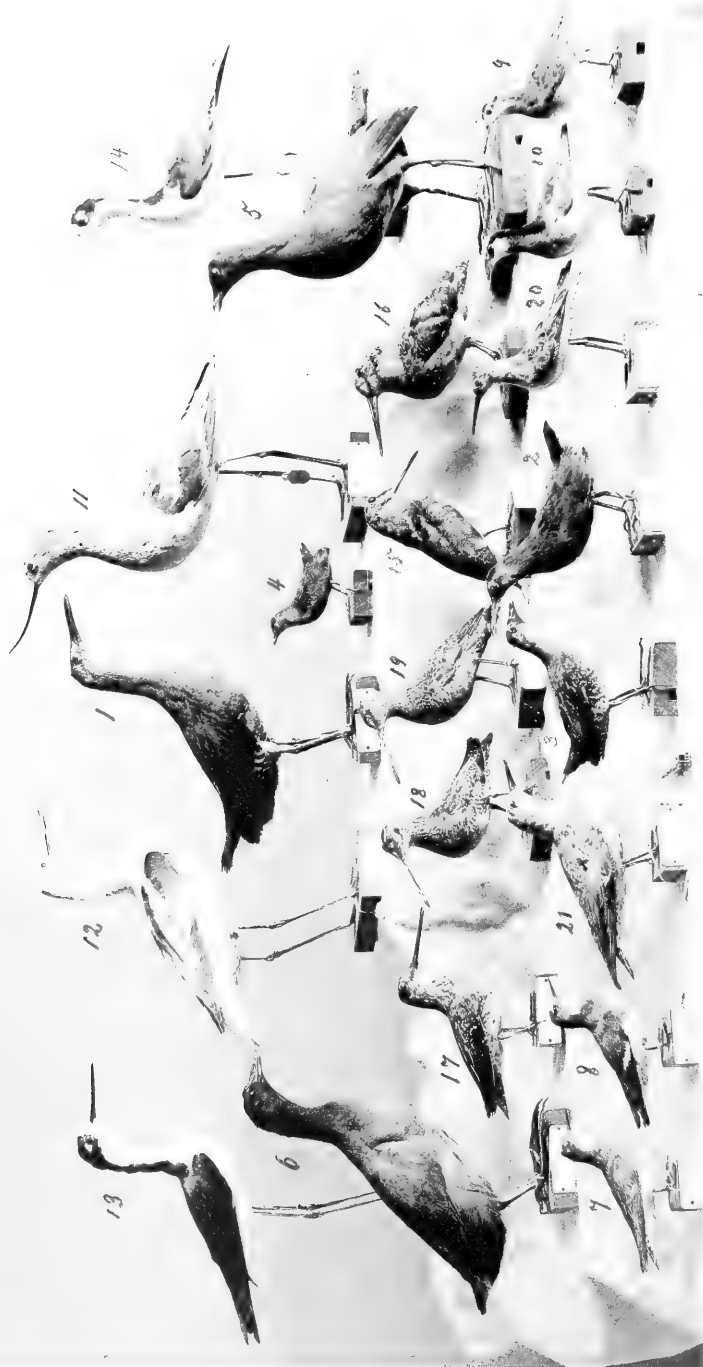


PLATE X.

1. KING RAIL; Female. 2. VIRGINIA RAIL; Male. 3. SORA; Male. 4. BLACK RAIL; Female. 5. FLORIDA GALLINULE; Male. 6. AMERICAN COOT; Female.
 7. NORTHERN PHALAROPE; Male. 8. Female. 9. WILSON'S PHALAROPE; Male. 10. Female. 11. AMERICAN AVOCET; Male. 12. Female. 13. BLACK NECKED
 STILT; Male. 14. Female. 15. AMERICAN WOODCOCK; Male. 16. Female. 17. WILSON'S SNIPES; Male. 18. Female. 19. LONG-BILLED DOWITCHER; Male.
 20. STILT SANDPIPER; Male. 21. KNOT; Male.

with reddish white; tertials widely striped, like the scapulars; remiges plain umber brown; rectrices raw umber, with a dusky, medial stripe. Lower mandible and edges of upper brownish yellow, ridge of upper and tips of both deep brown; iris bright red; feet yellowish brown, tinged with olive; claws of the same color. *Downy young:* Uniform glossy black; bill dusky, the end, and incomplete wide band near the base (enclosing nostril), pale yellowish or whitish (in the skin); legs and feet brownish (in skin)."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	17.00	23.25	6.75	3.00	2.35	2.35
Female . . .	15.00	21.25	6.00	2.75	2.10	2.25

This bright colored Rail breeds throughout its range, and is abundant in the Mississippi valley. Its call note, "Creek, creek, creek, creek," and of flight, "Cark, cark, cark," can often be heard both night and day, and at times during the early breeding season they are almost as noisy as the Guinea-hens. If it were not for its voice its presence would seldom be known, as it skulks and hides from its pursuers, and when hard pressed runs into the deeper waters within the reeds and rushes, preferring to swim (and can also dive) to taking wing, knowing well that it is safer within its watery, grassy cover, for which it is so well adapted.

Its flights, when not suddenly started, are at dusk and during the night. It springs into the air with dangling legs and rapid strokes of its short wings; but if going any distance, its legs, like its neck, are soon stretched out to their full extent, flying rather slowly and near the ground.

Its food consists of insects, worms, tadpoles, small snails, etc.; seeds of the various kinds of water grasses also help to make up the bill of fare. Its nest is placed on the ground, in marshy places, at or near the edge of water, generally upon a hummock, in a thick, heavy growth of grass, or under a bush, and made of coarse grasses, weeds and rushes; is quite bulky, and so woven together as to often form a partial cover overhead. Eggs six to twelve, 1.63x1.25; pale bluish to cream white, sparingly speckled and spotted with various shades of reddish brown, and shell stains of purple and lilac, the spots thickest and often running together around larger end; in form, oval.

Rallus virginianus LINN.

VIRGINIA RAIL.

PLATE X.

Summer resident; rare; during migration, common. Arrive the middle of April to first of May; begin laying about the middle of May; return in September to October.

B. 554. R. 572. C. 677. G. 268, 63. U. 212.

HABITAT. The whole of temperate North America, north to British Columbia and Hudson's Bay, south to Guatemala and Cuba.

SP. CHAR. "*Adult*: A miniature of *R. elegans*, but more deeply colored. Above, olivaceous, heavily striped with black; wing coverts chestnut rufous; remiges plain dusky; crown and nape dusky, sometimes uniform, usually indistinctly streaked with olive; a brownish white supraloral line; side of head uniform plumbeous (sometimes obscured with a brownish wash); malar region, foreneck, jugulum, breast, sides and abdomen, sometimes throat also, cinnamon, the middle of the belly lighter (sometimes whitish); flanks (not sides) and axillars dusky, barred with white; lining of wing dusky, the feathers tipped and bordered with white. *Downy young*: Glossy black; bill scarlet or orange red in life (whitish or pale yellowish in the skin), slightly marked with blackish in front of the nostril and on base of mandible. *Young, first plumage*: Top and sides of head, neck behind, back anteriorly, rump, breast and sides, dull dead black; interscapular region black, with a few of the feathers margined with brownish olive; wing coverts and wings nearly as in adult, a little duller and darker, perhaps; superciliary line obscure ashy. Throat ashy white, finely spotted with black; central region of lower breast and abdomen, with a few of the feathers on the sides, tinged with white; anal region and crissum dull reddish chestnut."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.00	14.25	4.20	2.00	1.35	1.50
Female	9.25	13.70	3.90	1.80	1.30	1.40

During the breeding and warm season, this little red breast is found throughout the United States; wintering chiefly in the Southern States and Mexico; casually into Central America. It is similar in habits to its larger cousin, the King Rail, which it closely resembles in both structure and color, but it has a much more extended range, and is at home in salt as well as fresh water swails and marshes. Its nest is placed in thick growths of grass, on low, boggy grounds, quite bulky, made of grass, weeds, etc. Eggs six to ten; they are said to average 1.25x.95; measurement of a set collected May 21st, 1878, at Pewaukee, Wisconsin: 1.26x.90, 1.27x.90, 1.27x.90, 1.32x.90,

1.28x.91, 1.30x.92, 1.32x.92, 1.35x.92, 1.30x.93, 1.29x.95; cream white, thinly spotted with reddish brown, and faint markings of lilac; thickest around larger end; in form, oval to ovate.

GENUS **PORZANA** VIEILLOT.

"Bill shorter than the head, compressed, straight; nostrils in a wide groove, with a large membrane; wings moderate; primaries longer than tertials; tail short; legs rather robust, the tarsus about the length of the middle toe; toes long, the inner one slightly shorter than the outer. General form compressed and slender."

SUBGENUS **PORZANA**.

Secondaries without white. Wings more than 4.00; above, olive brownish, striped with black. (*Ridgway*.)

Porzana carolina (LINN.).

SORA.

PLATE X.

Summer resident; rare; in migration, abundant. Arrive the middle of April to first of May; begin laying about the middle of May; return in September to October.

B. 555. R. 574. C. 679. G. 269, 64. U. 214.

HABITAT. The whole of temperate North America; breeding chiefly northward; south to the West Indies and northern South America.

SP. CHAR. "*Adult*: Above, bright olive brown, with longitudinal spots of black, some of the feathers edged with white; top of head with a broad longitudinal stripe of black; anterior portion of head, with chin and throat, black; sides of head and neck (except as described), jugulum and breast light plumbeous; abdomen white; anal region and crissum creamy white or pale buff; flanks sharply barred with white and slate color. *Young*: Similar, but lores and superciliary stripe brownish, the chin and throat whitish; rest of neck, with jugulum and breast, light brownish; bill greenish yellow (more orange, especially at base, in summer adults); iris brown; legs and feet greenish. *Downy stage* — *chick a few days old*: Bill short, exceedingly compressed, high at base, rapidly tapering, the tip deflected; the whole body densely covered with dull black down, beyond which are produced abundant long, glossy black, hair-like filaments. Upon the throat is a tuft of stiff, coarse, bristle-like feathers of a bright orange color; these are directed forward, and give the bird a most singular appearance."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.75	14.00	4.20	2.00	1.30	.85
Female . . .	8.25	13.00	4.00	1.90	1.30	.80

This species is more abundant throughout the United States than any other of the family, and, as it occasionally visits the

cultivated bottom and meadow lands, its habits and actions are more generally known; its natural haunts, however, are on marshy, reedy, boggy grounds, bordering sluggish streams and ponds of water. These birds are timid, and keep well out of sight, and, if they think they are observed, run swiftly into the thickest growths of reeds and rushes; but their curiosity is great, and if the intruder will stand motionless, or hide, the birds as a rule will cautiously come back, with head well forward on the lookout, bowing gracefully at each step, but showing their intense excitement by the quick, nervous jerk of their short, upright tails; they, however, soon forget their fright, and I have had them feed within ten feet of me, but off like a flash at the first motion. Where the birds are often hunted, fear overcomes their curiosity, but by thumping loudly with a paddle on the boat, or making a sudden noise in their haunts (which is usually answered by their startled "Kuk, kuk, kuk, kuk"), I have often been able to catch a glimpse of one here and there peeking out of their cover; but in this case it requires both time and patience. Their long, slender toes enable them to run upon the surface water plants and to climb to the tops of reeds and rushes for snails, insects, etc., and in the same way to follow the stems beneath the water to their roots; and, while their feet are not adapted to swimming, they readily cross short openings, can dive, and have the faculty of slowly sinking out of sight in the water.

Their flight when startled is tremulous and slow, with dangling legs just clearing the growth beneath, into which they quickly drop (an easy mark for the poorest of wing shots). They are, however, capable of sustaining themselves for a long time in the air, flying directly, with head and feet stretched out in a line with the body.

Their nests are placed on marshy grounds, at the border of ponds and old channels of streams, in elevated tussocks of grass, a shallow or platform nest, made loosely of grass, weeds and rushes. Eggs six to ten, 1.20 x .90; grayish to olive drab, specked and spotted with purple and reddish brown; in form, oblong oval. A set of nine eggs, collected June 4th, 1876, at

Horicon Lake, Wisconsin, are, in dimensions: 1.25x.88, 1.19x.90, 1.20x.89, 1.18x.92, 1.19x.90, 1.20x.92, 1.22x.90, 1.19x.89, 1.19x.89.

SUBGENUS COTURNICOPS BONAPARTE.

"Above, ochraceous, with broad black tips and narrow transverse white bars; secondaries white, forming a conspicuous patch on the extended wing."

Porzana noveboracensis (GMEL.).

YELLOW RAIL.

Summer resident; rare. Arrive the first to middle of April; return in October.

B. 557. R. 575. C. 680. G. —, 65. U. 215.

HABITAT. North America, north to Nova Scotia, Hudson's Bay, Manitoba and Minnesota; west to Nevada and California; south to Cuba.

SP. CHAR. "*Adult*: Yellowish ochraceous, very glossy above, where broadly striped with black, the black intersected by narrow bars of white; belly whitish; flanks dusky, narrowly barred with white; crissum light cinnamon; axillars, lining of wing and exposed portions of secondaries white. Bill greenish black, with the base dull yellowish orange; iris hazel; feet and claws light flesh color."

There is a considerable range of individual variation, both in size and markings, even among specimens from the same locality.

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.75	12.50	3.55	1.30	.85	.55
Female	6.50	11.75	3.45	1.00	.82	.54

The habits and distribution of this species are imperfectly known. I am inclined to believe that it ranges north on the Pacific slope into British Columbia, and south to central Mexico.

These birds are seldom met with, but this is not strange, as they are crepuscular in habits, and rest hidden during the day in their marshy haunts, where, at the least alarm, they run, skulk and hide like mice, and it is next to impossible to force them to take wing.

Their nests are placed on the ground in marshy places, and are said to be loosely constructed of grasses, etc. Eggs six to ten, creamy buff, finely speckled and spotted with rusty brown; in form, oval. Their average measurement, as given by Mr. Ridgway, is 1.12x.83. A single egg, taken by Dr. Hoy from a

nest on a marsh in northern Illinois, is buff white, sparingly marked with fine brownish dots and obscure shell stains; very small, only .99x.76.

SUBGENUS CRECISCUS CABANIS.

"Above, blackish brown, speckled with white."

Porzana jamaicensis (Gmel.).

BLACK RAIL.

PLATE X.

Summer resident; rare. Arrive about the middle of March to first of April; begin laying about the middle of May; return in October.

B. 556. R. 576. C. 681. G. 270, 66. U. 216.

HABITAT. Temperate North America, north to Massachusetts, Nebraska and Oregon, south through the greater part of South America to Chili; West Indies.

SP. CHAR. "Smaller than *P. noveboracensis*, and the smallest of North American *Rallidæ*. *Adult*: Head, neck and lower parts dark plumbeous or slate color, darkest, and often nearly black, on the pileum; abdomen and crissum brownish black, marked with transverse bars of white; nape and back dark chestnut or reddish sepia brown, the other upper parts brownish black, with small dots and irregular transverse bars of white; primaries immaculate dusky, or with small spots of white. *Young*: Similar, but lower parts dull ashy, the throat inclining to white, and the crown tinged with reddish brown. *Downy young*: Entirely bluish black. Bill black; iris red; feet bright yellowish green."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.00	11.50	3.25	1.35	.90	.50
Female...	5.50	10.50	3.00	1.30	.85	.50

This little species does not appear to be common anywhere within its wide and extended range. Its habits are similar to those of the family, though it seems to prefer for its haunts the swails and moist lands where the grasses are short.

Its nest is placed in a depression on marshy ground, and composed of grass blades; in form, round and deep. Eggs six to ten, 1.02x.80; creamy white, thickly sprinkled with small dots of reddish brown; in form, oval. Two eggs—the remains of a set of eight, collected near Manhattan, Kansas, and loaned to me for examination by Dr. C. P. Blachly—measure: 1.08x.75, 1.05x.78.

SUBFAMILY GALLINULINÆ. GALLINULES.

"A frontal process, as in *Fulicinæ*; toes without lateral lobes; size large."

GENUS *GALLINULA* BRISSON.

"Bill shorter than head, compressed, its vertical outlines convex terminally, straight or slightly concave opposite the nostrils; nostril elongated, longitudinal, slit-like; forehead covered by an extension of the horny covering of the bill (rudimentary in the young). Middle toe longer than the tarsus; toes with a slight lateral membrane or margin."

Gallinula galeata (LIGHT.).

FLORIDA GALLINULE.

PLATE X.

Summer resident; rare. Arrive the last of April to first of May; begin laying about the middle of May; return in October.

B. 560. R. 579. C. 684. G. —, 67. U. 219.

HABITAT. The whole of tropical America and temperate North America, north to the British Provinces.

SP. CHAR. "*Adult*: Frontal plate large, obovate, truncated or slightly convex posteriorly, flat and smooth, or tumid and corrugated; bill shorter than the head, rather thick, compressed; head, neck and entire lower parts dark plumbeous, with a bluish cinereous cast, frequently nearly black on the head and neck, and generally lighter (in autumnal and winter specimens quite white) on the abdomen; crissum white, the middle feathers black; feathers of the flanks widely edged with white, producing broad stripes; edge of the wing and edge of outer primary white; upper parts dark russet or sepia brown, darker on the rump; bill and frontal shield bright scarlet in life, the end of the former greenish yellow or bright yellow; iris brown; legs and feet yellowish green, the joints ashy blue; upper part of the naked tibiæ scarlet. *Young*: Similar, but frontal shield rudimentary; the bill brownish, paler at the tip; the whole lower parts suffused with whitish, and the head mixed with the same, particularly the throat, which is sometimes wholly white; stripes on the flanks less distinct, or nearly obsolete. *Downy young*: Glossy black, the medial lower parts fuliginous; throat and cheeks interspersed with silvery white hairs; bill yellowish (red in life?) crossed about the middle by a dusky bar."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Frontal shield.
Male	14.00	22.25	6.80	3.00	2.20	1.10	.65
Female . . .	13.00	21.75	6.50	2.90	2.10	1.00	.60

The Gallinules in general habits do not differ much from the Rails. This species is a common resident from the Carolinas to California, and south; a summer resident north, rare in the Eastern States, increasing in numbers westward into the Mississippi valley, where they breed chiefly north of 40°.

In the early settlement of Wisconsin, I had a good opportunity to observe their habits on Pewaukee Lake (where they breed in abundance), a famous resort for water fowls, and where my brother and I have spent many and many a pleasant day in our log canoe. The settlements and summer tourists have frightened most of the birds away, but this species, also the Sora and Virginia Rail, still breed there in considerable numbers. I have also met with these birds in Mexico and Central America.

They inhabit the grassy, reedy edges of shallow ponds and fresh water streams. I have met with them in brackish water bayous, but never on the salt water marshes, but they no doubt do occasionally visit or stop there to rest; their natural haunts are inland. They occasionally wander quite a distance from the water, but, as a rule, are to be looked for swimming, or running through the rushes, over the lily pads and other surface water plants. They ride the water lightly, with tails erect and heads gracefully bobbing at every stroke of the feet. They also dive readily, and can rise from the water in a running, flapping manner, and, like the Rail, fly with dangling legs, and drop into the first cover; but they are much more easily flushed again. In migration, or when obliged to fly any distance, their legs as well as necks are stretched out to their fullest extent. Their guttural sonorous "Kra, kra, kra, kra," is often uttered at morn and eve, and during the day, when startled.

The young leave the nest as soon as hatched, and run and dive as readily as the parents; chasing insects here and there in their watery haunts, for which they are so perfectly adapted; hiding, quick as thought, at the least alarm; in fact, they seem to have from the start a full knowledge of their surroundings, and the many enemies they have to guard against, in as well as out of the water.

Their food consists of snails, insects, worms, seeds of water plants, etc.

Their nests are placed in rushes and reeds growing in shallow water, or on swampy lands; built on the tops of old, broken-down stalks, and are composed of the same material, weeds and grasses — also the leaves of the cat-tail flag, when growing in the

vicinity; it is a circular structure, and, in some cases, quite deep and bulky. Eggs usually eight to ten, 1.73x1.24; buff white, thinly spotted and splashed with varying shades of reddish brown; in form, oval. One set of thirteen, collected May 25th, 1878, on a bog in Pewaukee Lake, Wisconsin, measure as follows: 1.63x1.18, 1.84x1.27, 1.67x1.18, 1.60x1.16, 1.67x1.18, 1.78x1.30, 1.81x1.29, 1.79x1.29, 1.88x1.27, 1.70x1.16, 1.80x1.30, 1.75x1.18, 1.80x1.28.

SUBFAMILY FULICINÆ. COOTS.

"A frontal process, as in *Gallinulæ*; toes with a lateral lobed margin; size large."

GENUS *FULICA* LINNÆUS.

"Very similar to *Gallinula*, but the toes margined by a broad, deeply-scalloped, lateral membrane. Bill shorter than the head, straight, strong, compressed, and advancing into the feathers of the forehead, where it frequently forms a wide and somewhat projecting frontal plate; nostrils in a groove, with a large membrane near the middle of the bill. Wings rather short, second and third quills usually longest; tail very short; tarsus robust, shorter than the middle toe, with very distinct transverse scales; toes long, each having semicircular lobes, larger on the inner side; hind toe rather long, lobed."

Fulica americana GMEL.

AMERICAN COOT.

PLATE X.

Summer resident; not uncommon; during migration, abundant. Arrive the middle of March to the middle of April; begin laying the last of May; a few linger late into November.

B. 559. R. 580. C. 686. G. 271, 68. U. 221.

HABITAT. The whole of North America, from Greenland and Alaska southward to northern South America, Bermudas, West Indies (and Trinidad?).

SP. CHAR. "*Adult*: General color uniform slate color or slaty plumbeous, the head and neck and anterior central portion of the crissum black; lateral and posterior portions of the crissum, edge of wing and tips of secondaries white. (In winter, the belly suffused with whitish.) Bill milk white, more bluish terminally, each mandible with a spot of dark brown near the end, bordered anteriorly with a more or less distinct bar of reddish chestnut; frontal shield dark chestnut or liver brown, the culmen just in front of this tinged with greenish yellow; iris bright crimson; legs bright yellowish green. The tibiæ tinged behind and above with orange red; toes light bluish gray, tinged with yellowish green on scutellæ of basal phalanges. *Young*: Similar, but lower parts more gray, and much suffused with whitish, especially on the throat and belly; bill

dull flesh color, tinged with olive greenish, the frontal shield rudimentary; iris brown. *Downy young:* Prevailing color blackish plumbeous; head, neck and upper parts relieved by numerous crisp, elongated, somewhat filamentous bristles, these sparse, light orange buff and white on the upper parts, but dense and deep salmon orange on the head and neck, where the dark plumbeous down is almost or quite concealed; these colored filaments entirely absent from the whole pileum, which is mostly bald toward the occiput, elsewhere covered with closely-appressed black bristles; lores densely covered with short, stamen-like, orange red papillæ. Bill orange red, the tip of the maxilla black; feet dusky (in skin)."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.*</i>
Male	15.50	25.50	7.50	2.30	2.10	1.30
Female	14.00	24.50	7.10	2.25	2.00	1.30

This species is not very common on the Atlantic coast, north of the more Southern States, but abundant westward. It breeds occasionally throughout its range, but chiefly from latitude 43° to 55°; wintering in large flocks in the Southern States and Mexico, decreasing in numbers southward.

These birds are in many respects like their cousins, the Gallinules, which they so closely resemble; inhabiting the edges of swampy, boggy ponds, where covered with a rank growth of reeds and rushes. They differ, however, in being social, going in flocks, and in preferring the open water in which to sport and rest, or muskrat houses and bare places of land to rest and dress their feathers upon; keeping, during the breeding season, near their reedy cover, into which they quickly swim and hide, in case of danger; but in the fall of the year, preparatory to migration, they often assemble out upon the open waters.

They swim and walk with a nodding motion of the head. I have noticed them occasionally dive for food, but they are not expert divers, and seldom do so except when closely pressed and unable to fly.

Its flesh is dark and not good eating, and its feathers not soft and downy, therefore not sought after by the pot hunter, nor considered a game bird by the sportsman; and for these reasons the birds are not shy, and are easily approached. They rise from the water in a laborious, running, flapping manner, but, when fairly in the air, fly quite steadily, with neck and feet well

* From frontal shield.

stretched out, the head usually inclining downward and the feet a little upward. At times, before mating, they are quite noisy.

Their food consists of aquatic insects, snails, tender water plants, buds, blossoms and seeds of different plants, etc.

Their nests are placed in tall weeds and rushes growing in shallow, muddy places, in ponds and sloughs; built on the tops of the broken-down old growth that forms a platform just above the water; quite a deep, hollow nest, composed of short, bitten-off stems of the weeds and rushes. Eggs usually eight or nine—I have seen eleven in a nest, 1.92x1.32; cream white, in some cases pale olive drab, thickly and evenly speckled with dark brown; in form, oval to ovate. A set of six eggs, taken from a nest on a marsh, near Horicon, Wisconsin, are, in dimensions: 1.90x1.29, 1.92x1.33, 1.92x1.32, 1.90x1.30, 1.92x1.29, 1.92x1.33.

ORDER LIMICOLÆ.

SHORE BIRDS.

“Neck and legs usually elongated (the latter sometimes excessively so), the tibia usually more or less naked below. Hind toe short or rudimentary, sometimes absent, and inserted above the level of the anterior toes. Habits præcocial, and young dasyprædic. Palate schizognathous. Carotids double.”

FAMILY PHALAROPODIDÆ. PHALAROPES.

“Small birds, with Sandpiper-like appearance, but with very full, compact plumage, like that of the Coots, Gulls and Petrels; the tarsus greatly compressed, and the toes partly webbed, as well as fringed, by a lateral (sometimes scalloped) margin.”

GENUS PHALAROPUS BRISSON.

Bill slender, nearly cylindrical, not perceptibly widened toward the end; nostrils separated from loreal feathers by a space equal to much less than the depth of the upper mandible at the base. (*Ridgway.*)

SUBGENUS PHALAROPUS.

Wing less than 4.50; tarsus less than 1.00; web between outer and middle toes extending to or beyond second joint of the latter; lateral membrane of all the toes broad and distinctly scalloped. (*Ridgway.*)

Phalaropus lobatus (LINN.).**NORTHERN PHALAROPE.**

PLATE X.

Migratory; rare. Arrive about the middle to last of May.

B. 520. R. 564. C. 603. G. 264, 69. U. 223.

HABITAT. Northern portion of the northern hemisphere; south in winter to Guatemala; breeding from Labrador and Alaska north to Iceland and Greenland. (Northern Asia and Europe.)

SP. CHAR. "*Adult female, in summer*: Above, dark plumbeous, the back striped with ochraceous or buff; wings dusky, the greater coverts broadly tipped with white; lower parts white; chest and sides of neck rufous. *Adult male, in summer*: Similar to the female, but colors duller, the rufous almost confined to sides of neck, and less distinct, the chest chiefly mixed white and grayish. *Winter plumage*: Forehead, superciliary stripe, sides of head and neck, with lower parts generally, pure white; top of head grayish, the feathers with dusky shaft streaks and whitish borders; a blackish spot in front of eye, and side of head, from beneath eye across ear coverts, mixed dusky and grayish white; upper parts chiefly grayish; sides of chest washed or clouded with grayish. *Young*: Top of head dusky, with or without streaks; back and scapulars blackish, distinctly bordered with buff or ochraceous; middle wing coverts bordered with buff or whitish; forehead, supra-auricular stripe, lores and lower parts white, the chest and sides of breast sometimes suffused with dull brownish; ear coverts dusky. *Downy young*: Above, bright tawny, the rump with three parallel stripes of black, enclosing two of paler fulvous than the ground color; a triangular patch of brown on crown, bounded irregularly with blackish; a black line over ears; throat and rest of head pale tawny; rest of lower parts white, becoming grayish posteriorly."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.50	13.50	4.20	2.10	.80	.85
Female . . .	7.90	14.25	4.50	2.25	.82	.90

Iris dark brown; bill and claws black; legs, feet and webs slate blue.

These birds are quite common, during migration, along both coasts, but rare inland. Their flight is very strong and easy, and while feeding often rise, flying circling and low, dropping here and there upon the floating seaweeds and debris that collect so abundantly in the "tide streaks." They ride the waters lightly, drifting upon its surface like a feather, gracefully picking to the right and left as they go; in actions much like the true Brant, *Branta bernicla*, and for this reason are known by the sailors as "Sea Geese."

May 25th, 1883, I saw, at Fort Wallace, Kansas, on a pond made by damming the south fork of the Smoky Hill River, a pair of little birds swimming near the center with a small flock of American Eared Grebes. From their motions and position on the water I knew they were Phalaropes, but saw they were too small for Wilson's, which is a common migrant through Kansas; I had never noticed the latter birds resting out upon the water, or swimming, except short distances on their feeding grounds, or when winged by a shot; but I could not make out with certainty whether they were the Northern or the Red Phalarope. So I laid down in a hollow at the edge of the bank and watched them for a long time, hoping the wind, which was strong and favorable, would drift them within shot, but they kept in the center of the pond, and when they did rise circled spirally to a height of about one hundred feet, then struck north. *Gone*, and my disappointment was great! As I lay there estimating the distance, and blaming myself for not venturing a shot, my hopes were revived by the sight of a flock of fifteen or sixteen winging their way down the pond and alighting with the Grebes at the place where the others were seen. Instead of quietly resting, like the mated pair, they began chasing each other with tremulous wings and bobbing of heads. The males (the plainest bird, an exception to the rule) were doing their best to appear brave and attractive. Their actions during courtship are peculiar and ludicrous, much like those of Wilson's Phalarope, which I have watched on their love (or mating) grounds. The birds only remained a short time, arising in a body from the water and circling like the first. I quickly slipped into my gun a couple of shells loaded with No. 6 shot, and dropped five of the birds, which the wind soon brought to the shore; on picking them up they proved to be the Northern Phalarope, (*Lobipes hyperboreus*), two males, and three females. I measured the birds, but only mounted one, as I have a pair in the "Goss Ornithological Collection," shot in the Bay of Fundy on the "rippings," where the birds gather to feed upon the minute snails and other forms of life on the drift—the shrimps feeding upon the same, herrings feeding upon the shrimps, pol-

lock, like hungry hogs, often leaping out of the water in their eager haste to catch the herrings, and the gulls screaming and swooping down for their share, make up a wild and exciting scene in the never-ending struggle for life, the strong preying upon the weak. And late in May, 1882, while out in a sealing schooner off Cape Flattery, I saw several small flocks, two of which were over one hundred miles from the shore. Their nests are placed in depressions in the ground (usually near the water), and occasionally sparingly lined with grasses. Eggs 1.10x.80; usually four, varying in color from olive green to buffy olive brown, rather thickly but irregularly spotted and blotched with sepia to blackish brown; in shape, rather pyriform. A set of three eggs, taken July 2d, 1884, by Mr. Robert MacFarlane, at Anderson River, Arctic America, measure: 1.09x.79, 1.10x.78, 1.12x.80.

SUBGENUS STEGANOPUS VIEILLOT.

"Bill slender and subulate, with strictly basal nostrils, as in *Lobipes*; web between outer and middle toes not reaching to second joint, the lateral membrane of all the toes narrow and scarcely scalloped."

Phalaropus tricolor (VIEILL.).

WILSON'S PHALAROPE.

PLATE X.

Summer resident; rare; in migration, common. Arrive the last of April to first of May; begin laying the last of May to first of June; return usually in September. June 8th, 1886, I found three pairs of these birds breeding on marshy grounds, bordering a slough or pond of Crooked Creek, Meade county.

B. 519. R. 565. C. 602. G. 265. 70. U. 224.

HABITAT. Temperate North America, but chiefly in the interior; north to Nova Scotia, Maine, Saskatchewan and Oregon; south during migration to Brazil and Patagonia; breeding from Kansas northward, chiefly north of 40°.

SP. CHAR. "*Adult female, in summer.* Forehead and crown pale pearl gray, the former with a blackish line on each side; occiput and nape white, changing to plumbeous gray on the back and scapulars. Stripe on the side of the head (chiefly back of the eye), and continued down the side of the neck, deep black, changing on the lower part of the neck into rich dark chestnut—this extending backward more interruptedly on each side of the interscapular region; outer scapulars marked with a similar stripe. A short stripe above the lores and eyes

(not reaching the bill), cheeks, chin and throat pure white; foreneck and jugulum soft buffy cinnamon, deepest laterally and posteriorly, and fading gradually into creamy buff on the breast; remaining lower parts white. Wings brownish gray, the coverts and tertials bordered with paler; rump brownish gray, upper tail coverts pure white. *Adult male, in summer:* Smaller and much duller than the female, with the beautiful markings of the latter but faintly indicated. *Adult and young, in winter:* Above, continuous light ash gray; upper tail coverts, superciliary stripe and lower parts white, the jugulum and sides of breast tinged faintly with pale ashy. *Young, first plumage:* Crown, back and scapulars blackish dusky, the feathers bordered conspicuously with buff. Upper tail coverts, superciliary stripe and lower parts white, the neck tinged with buff. *Downy young:* Prevailing color bright tawny fulvous, paler beneath, the abdomen nearly white; occiput and nape with a distinct median streak of black, on the former branching laterally into two narrower, somewhat zigzag lines; lower back and rump with three broad black stripes; flanks with a black spot, and caudal region crossed by a wide subterminal bar of the same. Iris dark brown; bill, legs, feet, webs and claws black."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.50	15.50	4.80	2.00	1.20	1.20
Female . . .	9.50	16.75	5.25	2.30	1.25	1.35

* These birds are rare in the Eastern States, abundant in the Mississippi valley and quite common westward within their range. They inhabit the marshes, swails and edges of shallow ponds, feeding upon minute snails and other small forms of life that abound in their aquatic haunts; procuring the same chiefly by running over the moist ground or wading in the short growths of water grasses. They swim buoyantly, but seldom long at a time or far from the shore, and I never saw one dive or make an attempt to do so, but when frightened, prefer to escape by flight, which is strong, but at such times in a zigzag and wavy manner, dropping back as soon as out of danger. As a rule, they are not timid and are easily approached. Their motions, whether upon the land or water, are easy and pleasing, gracefully nodding the head, or picking from side to side as they go.

The actions of a pair of these birds while mating are not very demonstrative, but a flock so engaged in their rivalries often assume positions both amusing and ludicrous, as they bow, circle around and chase each other. The female is larger and brighter in color than the male, but from observations I am led to think certain writers are mistaken in reporting that the females arrive first and do all the courting, but leave the work of nestmaking,

incubation and the rearing of the young to the males. I have never been so fortunate as to find either of the birds upon the nest; but certainly both appear equally watchful and solicitous, circling around and croaking as one approaches their nests, or near their young, (grayish little fellows, that leave the nest as soon as hatched.) In the earliest arrival noticed, the sexes appear to be about equally divided, and I am inclined to think further examination will prove the birds to be joint workers in the hatching and rearing of their young.

Their nests are placed on the ground, usually on hummocks, quite deeply excavated, and lined with a thin layer of grasses. Eggs three or four, usually four; ground color cream to brownish drab, rather thickly but irregularly blotched with varying shades of brown, to black or deep blackish brown; in shape, pyriform. A set of four eggs, taken June 1st, 1883, at Pewaukee, Wisconsin, from a nest on a marsh, are, in dimensions: 1.22x.90, 1.23x.88, 1.23x.88, 1.25x.90.

FAMILY **RECURVIROSTRIDÆ.** AVOCETS AND STILTS.

"Tarsi and bill very long; toes partially webbed and without scalloped margin."

GENUS **RECURVIROSTRA** LINNÆUS.

"Hind toe rudimentary, but distinct; anterior toes united to the claws by a much emarginated membrane. Bill depressed, decidedly recurved, extending into a fine point, which is slightly decurved. Tail covered by the wings."

Recurvirostra americana Gm.

AMERICAN AVOCET.

PLATE X.

Summer resident in the western part of the State; rare; during migration, common throughout the State. Arrive the last of April to first of May; begin laying early in June; occasionally linger until late in the fall.

B. 517. R. 566. C. 600. G. 266, 71. U. 225.

HABITAT. Temperate North America, north to Great Slave Lake, south in winter to Guatemala, Cuba and Jamaica; rare in the Eastern States, not common along the Pacific coast, but—in suitable localities—abundant in the interior, west of the Mississippi River; breeding from southwestern Texas northward with-

in its range, chiefly from Colorado to Manitoba, Saskatchewan, Utah and southeastern Oregon.

SP. CHAR. "Wings (except secondaries, terminal half of greater coverts and inner secondaries), inner scapulars and adjoining feathers of the back brownish black; lower parts, rump, outer scapulars and middle of the back white; tail ashy white or pale ashy. *Adult, in summer:* Head, neck and breast light cinnamon, becoming white around the bill and fading gradually into the white of the body; tertials brownish gray. *Adult (and young), in winter:* Head, neck and breast white, more or less tinged with pale bluish gray, especially on crown and nape. *Young:* Primaries slightly tipped with whitish; scapulars and feathers of back tipped or transversely mottled with pale fulvous or buff; crown dull grayish; nape tinged with light rufous; bill deep black; iris amber brown; legs and feet ashy blue.

"The intensity of the cinnamon color on the head and neck varies with the individual; sometimes there is a dusky gray suffusion around the eye, this being especially characteristic of younger birds."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	17.75	30.50	9.00	3.65	3.70	3.75
Female	17.00	29.50	8.60	3.50	3.60	3.50

This species inhabit the swales and edges of ponds, preferring the alkali marshes and pools of water. They move about with easy motions, bowing the head at nearly every movement; are perfectly at home on the land and float as lightly upon the water as a Gull.

Their usual feeding habits are peculiar, skimming the surface of the water or land from side to side for minute forms of life, and when so engaged upon the land sway the body at each step, much like a person mowing or cradling. They also pick up the larger forms, and are quite expert in chasing and catching insects. They are social and usually found in small flocks; as a rule rather shy, but at their nesting places, especially near the hatching time, often meet the intruder, circling around and scolding, and when near try to scare him away by darting swift as an arrow, sheering as they pass. On alighting, open their wings high above their backs and close them, much like the Bartramian Sandpiper (generally known as the Field or Upland Plover). Their nests are placed on the ground, in the tall grass at or near the edges of shallow ponds of water; made of the stems of the old grass and lined with the finer leaves of the upland prairie grasses. Eggs three or four, 1.87x1.30; olivaceous

drab to buff, rather uniformly spotted or blotched with varying shades of light to dark brown; in form, obovate. A set of four eggs, taken July 5th, 1886, from a nest on an alkali marsh near Fort Garland, Colorado, are: 2.00x1.40, 1.89x1.39, 1.94x1.37, 1.97x1.36.

GENUS **HIMANTOPUS** BRISSON.

"Hind toe wanting; outer and middle toes connected at the base by a short web; the inner toe completely separated from the middle; bill subulate, deeper than broad, slightly upturned toward the end; legs excessively lengthened, the bare part of the tibia about half as long as the tarsus, which greatly exceeds the bill in length, the latter being nearly twice the length of the middle toe."

Himantopus mexicanus (MULL.).

BLACK-NECKED STILT.

PLATE X.

Summer resident in the western part of the State; rare. Arrive about the middle of May; begin laying by the first of June.

B. 518. R. 567. C. 601. G. —, 72. U. 226.

HABITAT. Temperate North America, from New Brunswick, Maine, Minnesota and Oregon, southward; south in winter to Peru, Brazil and West Indies. Rare in the middle and eastern provinces, except Florida, also along the Pacific coast; breeding in suitable localities, and in abundance in western Texas, southern Colorado, Utah, eastern California and southeastern Oregon.

SP. CHAR. "*Adult male*: Forehead, a large postocular spot, lores, entire lower parts, rump and upper tail coverts white; remainder of the head, whole nape, back, scapulars and wings (both surfaces) glossy black, with a greenish blue reflection; tail pale grayish; bill black; iris crimson; legs and feet lake red or beautiful rose pink in life, yellowish in the dried skin. *Adult female*: Similar to the male, but back and scapulars brownish slate and the black of other portions duller. *Young, first plumage*: Similar to the adult female, but the feathers of the back, the scapulars and tertials bordered with buff or dull whitish, the black of the head and nape finely mottled with the same. *Downy young*: Above, light fulvous gray, mottled with dusky, the back and rump relieved by several large black blotches; head, neck and lower parts fulvous whitish; the crown, occiput and nape grayish, the crown with a mesial black streak, the occiput with coarse spots of the same; bill deep black; iris rosy carmine; legs and feet fine rose pink or delicate pale lake red (in life).

"Adult specimens in high breeding plumage sometimes have the white of breast, etc., tinged with soft, creamy pink."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	14.75	28.50	9.25	3.00	4.50	2.70
Female . . .	14.50	27.00	8.50	3.00	4.30	2.55

This slender wader inhabits the shores of bays, ponds of water, and swales where scantily covered with short grasses; alkali pools are favorite resorts. It swims buoyantly and gracefully, and moves on the land with easy, measured tread (not in a "tremulous manner," as supposed by some writers, on account of its extremely long and slender legs), runs swiftly, with partially raised wings, readily tacking or stopping in its chase after insect life. Its flight is not very swift, but strong and steady, with sweeping strokes, legs fully extended and head partially drawn back, after the manner of the Avocet, and, like the latter, will meet one often a long distance from their nests, scolding and threatening; at such times their necks are as fully extended as their legs, the latter often dangling as they retreat.

Their food consists of insects, minute shell fish, larvæ, and the various small forms of life. They are social, usually living and breeding in small flocks.

Their nests—when placed on dry, sandy land—are slight depressions worked out to fit the body; on wet lands, are upon bunches or masses of vegetation. Eggs three or four; buff to brownish olive, irregularly but rather thickly splashed and spotted with blackish brown; in shape, pyriform. A set of four eggs, taken May 17th, 1882, near Corpus Christi, Texas, from a nest near the water's edge, are, in dimensions: 1.72x1.23, 1.75x1.25, 1.78x1.24, 1.80x1.27.

FAMILY **SCOLOPACIDÆ**. SNIPES, SANDPIPERS, ETC.

(This family embraces a great variety of forms, from the smallest Sandpiper to the largest Curlews.)

"Bill exceedingly variable—short or long, straight, slightly recurved, or decidedly decurved, but usually more or less expanded laterally at the end, which is more or less sensitive. Hind toe usually present, rarely absent.

"Tarsus rounded in front, where clothed with a single row of transverse scutellæ."

GENUS **PHILOHELA** GRAY.

"Body very full, and head, bill and eyes very large. Tibia short, feathered to the joint. Toes cleft to base. Wings short, rounded, the three outer primaries very narrow and much attenuated; the fourth and fifth equal and longest.

Tarsi stout, shorter than the middle toe. Hind claw very short, conical, not extending beyond the toe. Tail of twelve feathers."

Philohela minor (Gmel.).

AMERICAN WOODCOCK.

PLATE X.

Occasional summer resident; quite common in migration. Arrive the last of February to middle of March; begin laying the first of April; a few linger until the ice closes their feeding grounds.

B. 522. R. 525. C. 605. G. 240, 73. U. 228.

HABITAT. Eastern United States, north to British Provinces, west to the plains; accidental in the Bermudas; breeding throughout its range.

SP. CHAR. "Bill long, compressed, punctuated and (in dried skins) corrugated near the end; upper mandible longer than the under, and fitted to it at the tip; wings moderate, three outer quills very narrow; tail short; legs moderate; eyes inserted unusually distant from the bill. *Adult:* Occiput with three transverse bands of black, alternating with three much narrower ones of pale yellowish rufous; upper parts of body variegated with pale ashy rufous, or yellowish red of various shades, and black; large space on front and throat reddish ashy; line from the eye to the bill, and another on the neck below the eye, brownish black; entire under parts pale grayish rufous, brighter on the sides and under wing coverts; quills ashy brown; tail feathers brownish black, tipped with ashy, darker on the upper surface, paler and frequently white on the under; bill light brown, paler and yellowish at base; legs pale reddish. *Downy young:* Generally, color light reddish buff or Isabella color, uniform on the lower surface; line from bill to eye, a large, somewhat elliptical patch covering forehead and fore part of the crown, a patch on the occiput (connected with that of the crown by a narrow isthmus) and a narrow mark behind the eye, with an oblique one below it, very dark chestnut; broad stripe down the rump also chestnut; stripe down the nape, and various large blotches on the back, wings, etc., rather light snuff brown."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.50	17.50	5.25	2.25	1.25	2.50
Female . . .	11.50	18.75	5.50	2.50	1.30	2.75

The following interesting description of this popular game bird is taken from "North American Water Birds," Vol. I, p. 184:

"In its habits the Woodcock is nocturnal. It never flies voluntarily by day, but only when forced from its retreats, usually keeping in close and sheltered thickets, and resorting at twilight to its favorite feeding places. It feeds almost exclu-

sively during the night, as its sight is very imperfect by day. Its eye is remarkably large and handsome, but unfit to bear the glare of the sun, its full and almost amaurotic appearance plainly suggesting the crepuscular habits of the bird. During the greater portion of the day the Woodcock remains closely concealed in marshy thickets or in rank grass; in the early morning or evening, and also on moonlight nights, it seeks its food in open places, but during the daytime in dark and dense coverts.

“The favorite places of resort of this species are low marshy grounds, swamps, and meadows with soft bottoms. During very wet seasons it seeks higher land—most generally corn fields—and searches for food in the soft ploughed ground, where its presence is indicated by the holes made by its bill. In seasons of excessive drought, the Woodcock resorts in large numbers to tide-water creeks and the banks of fresh water rivers; but so averse is it to an excess of water, that after continued or very heavy rains it has been known to suddenly disappear over widely extended tracts of country.

“In October and November this bird forsakes its usual feeding grounds, and resorts to tall, swampy woods, small streams overgrown with bushes, and newly-cleared lands. Its favorite food consists of larvæ, insects and (more especially) worms. As the approach of cold weather drives the latter deeper into the ground, the Woodcock resorts to woods and brush lands, where it gleans a subsistence on insects concealed under the leaves. That is considered by sportsmen as the most favorable season in which to shoot this bird, as it is then larger, fatter and more free from vermin than at any other time. The best sportsmen contend that the Woodcock should not be shot until the last of September or the first of October, and regard its destruction, when of imperfect flight, as both barbarous in itself and certain to render the race extinct, at least over portions of the country.

“The food of this species consists chiefly of worms, and also of several kinds of larvæ, which it finds under leaves and the debris of swampy woods and open bogs. The extreme portion of its bill is well supplied with nerves, and is so extremely sen-

sitive to the touch that by it the presence of worms in the soft earth at a depth of three inches is readily detected. This is a very voracious bird, and when kept in confinement requires constant attention and a large supply of food. It soon discovers and draws out every worm in the ground; and such as are provided for it are consumed in incredible quantities. It can in time be induced to feed on bread and milk, of which it will also consume an enormous quantity in twenty-four hours. The voracity of this species is evidently one of the occasions of its unsocial character. For the table the Woodcock is highly esteemed by epicures, and always commands a high price in the markets of our large cities. It is particularly sought for during the early part of the season, although birds taken at that time are much inferior in many respects to those procured later in autumn.

“The flight of this species is very peculiar. When flushed in its retreats, it rises to the height of the bushes or undergrowth, and quickly drops behind them again, usually running a short distance as soon as it touches the ground. Very little force is required to kill it, but, as it presents itself as a mark only for a moment, no other than a practiced sportsman will be successful. As it rises, the action of its wings causes a whistling sound. When found in open meadow land, however, it is comparatively easily shot, as it always gives warning by this whistling sound of its wings and seldom rises higher than a man’s head, skimming over the ground with a slow and steady flight to a short distance, when it settles again in the grass. But among bushes and thickets its course is at first indirect and unsteady, and unlike the flight of any other game; springing rapidly from the ground, it rises perpendicularly until it clears the tops of the trees or bushes; its flight then becomes more steady, but the bird is by that time usually out of reach, or only to be hit by sportsmen of experience and cool judgment.

“The call note of the Woodcock is a short ‘Quack,’ but this is not often heard except in the spring, when during the love season the male is said to have what may be considered its song. Towards dusk it mounts in the air, uttering peculiar whistling

notes, which are continued until a late hour in the evening; and the same are sometimes heard in the early morning. This peculiarity is mentioned by several writers, but the song is spoken of by some as a succession of cries, by others as a series of whistling notes. Lewis mentions it as occurring in the morning, and only occasionally at night. The Woodcock rises in the air by a kind of spiral motion to a considerable height, uttering its notes from time to time, until, having gained a certain elevation, it circles around in a wild, irregular manner, at the same time making confused and murmuring sounds; it then descends as rapidly as it rose. When it attempts to utter these notes on the ground, it seems to do so with difficulty, throwing its head toward the earth and erecting its tail. These manœuvres and this song are only noticed in spring, and unquestionably are the love song of the male to his mate.

"Its period of incubation is three weeks. The young bird when first hatched is not capable of active movement, and may be very easily caught. This species is said to have frequently two broods in a season. The female exhibits great ingenuity in her endeavors to conceal her young and to draw away intruders, fluttering over the ground, dragging her body heavily along as if wounded and incapable of flight, and then flying to a short distance, repeating these manœuvres until she has enticed her pursuers sufficiently far, when she suddenly takes wing, and returns to her offspring by a circuitous route."

On the 25th of May, 1874, while slowly moving about in the low bottom timber lands, near Neosho Falls, Kansas, I came across an old bird with several young, at least one-fourth grown; the moment I appeared in sight the mother uttered a sharp alarm note (the little ones hiding like magic), fluttering about as described above, rapidly uttering her warning note, until I was within ten feet, when she suddenly grasped a little one with her toes, and in a low and laborious manner flew about thirty yards and dropped it in a thicket, then swiftly winged herself away.

These birds nest on the ground in the timbered lands, along the streams and about the ponds, usually under an old log or at the foot of a stump; a loosely-constructed nest of old leaves and

grasses. Eggs three or four, 1.60x1.16; grayish to buff white, irregularly spotted and blotched with various shades of reddish brown and neutral tints; in shape, rather pyriform.

GENUS **GALLINAGO** LEACH.

"Lower portion of the tibia bare of feathers, scutellate before and behind, reticulated laterally like the tarsi. Nail of hind toe slender, extending beyond the toe. Bill depressed at the tip. Middle toe longer than the tarsus. Tail with twelve to twenty-six feathers. Plumage the same in winter and summer; young like the adult in colors and markings. The more slender body, longer legs, partly naked tibia, and other feathers, distinguish this genus from *Scolopax* and *Philohela*, and the cleft toes from *Macrorhamphus*."

Gallinago delicata (ORD.).

WILSON'S SNIPE.

PLATE X.

Migratory; common. Arrive in March to first of April; return as early as August; a few occasionally remain until their feeding grounds are frozen.

B. 523. R. 526a. C. 608. G. 241, 74. U. 230.

HABITAT. The whole of North America; south in winter to the West Indies and northern South America; breeding from about latitude 42° north to within the Arctic circle.

SP. CHAR. "(Tail feathers usually sixteen.) Bill long, compressed, flattened and slightly expanded toward the tip, punctulated in its terminal half; wings rather long; legs moderate; tail short. Entire upper parts brownish black; every feather spotted and widely edged with light rufous, yellowish brown or ashy white; back and rump transversely barred and spotted with the same; a line from the base of the bill over the top of the head. Throat and neck before, dull reddish ashy; wing feather marked with dull brownish black; other under parts white, with transverse bars of brownish black on the sides, axillary feathers, under wing coverts and under tail coverts; quills brownish black; outer edge of first primary white; tail glossy brownish black, widely tipped with bright rufous, paler at the tip, and with a subterminal narrow band of black; outer feathers of tail paler, frequently nearly white, and barred with black throughout their length. Bill brown (greenish gray in life), paler at base and darker toward the end; legs dark brown (light greenish gray in life)."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.50	16.80	5.20	2.20	1.20	2.50
Female . . .	11.15	17.25	5.25	2.30	1.25	2.60

Iris dark brown; claws black.

This highly-prized game bird is quite common from the Atlantic to the Pacific. It inhabits the open moist grounds, where it can feed and probe with its long, soft, sensitive, pointed bill

in the thin mud and soft earth for worms, larvæ and the tender roots of plants; it also readily picks up insects or anything eatable to its taste in sight. Its movements on the ground are easy, and, while feeding, its tail is partially erect and head downward, the bill just clearing the ground.

In courtship, the male struts with drooping wings and wide-spread tail around his mate, in a most captivating manner, often at such times rising spiral-like with quickly-beating wings high in air, dropping back in a wavy, graceful circle, uttering at the same time his jarring, cackling love note, which, with the vibration of the wings upon the air, makes a rather pleasing sound.

Their flight is swift and, on the start, in a zigzag and irregular manner. It is a most difficult bird to shoot; it requires a quick eye and a snap shot to bag four out of five. I have always had the best success when the birds are suddenly flushed, in shooting the instant its startled "Scaipe" reaches my ear, as it is invariably heard the moment the bird is fairly in the air. These birds are not social, and, although found at times in numbers, move about either alone or in pairs.

Their nests are usually placed on or under a tuft of grass; a mere depression, scantily lined with bits of old grass leaves. Eggs three or four, grayish olive, with more or less of a brownish shade, spotted and blotched, chiefly about the larger end, with varying shades of umber brown, and usually sharp, scratchy lines of black; in shape, pyriform. A set of four eggs, taken May 3d, 1878, at Pewaukee, Wisconsin, from a nest on a marsh, are, in dimensions: 1.51 x 1.14, 1.52 x 1.12, 1.54 x 1.13, 1.56 x 1.13.

GENUS **MACRORHAMPHUS** LEACH.

"General appearance of *Gallinago*. Tarsi longer than middle toe; a short web between the base of outer and middle toe. Plumage very different in winter and summer; young different from the adult. The membrane at the base of the toes will at once distinguish this genus from *Gallinago*, though there are other characters involved."

Macrorhamphus scolopaceus (Say).

LONG-BILLED DOWITCHER.

PLATE X.

Migratory; common. Arrive in April; begin to return in August, and I have noticed the birds late in October.

B. 525. R. 527*a*. C. 610. G. 242, 75. U. 232.

HABITAT. North America in general (except northeastern portion), but chiefly in the western provinces; south in winter to northern South America, West Indies; breeding in Alaska, etc., to the Arctic Ocean.

SP. CHAR. "Shaft of first primary strong, pure white; axillars, tail coverts and lower part of rump white, barred or transversely spotted with slate color; upper part of rump white, usually immaculate; tail slate colored or dusky, barred with white (or, in summer, adult with pale cinnamon on middle feathers). *Adult, in summer:* Head, neck and lower parts light cinnamon; breast scantily speckled, and sides barred with dusky; the head and neck streaked with the same; upper parts mixed black, light cinnamon and white, the first prevailing. *Winter plumage:* Belly and anal region white, usually unmarked; rest of plumage nearly uniform ash gray, somewhat mixed with white on breast and sides; a whitish superciliary stripe, and wing coverts bordered with white. *Young:* Back, scapulars and tertials varied with black and light clay brown, the latter chiefly on edges of the feathers; lower parts dull whitish, soiled with dull buff or clay color, especially across breast, the jugulum and sides usually indistinctly speckled with dusky. Bill dark olive; iris reddish hazel; feet light yellowish olive; claws black."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	11.00	18.50	5.70	2.25	1.55	2.65
Female . . .	11.50	18.75	5.75	2.35	1.60	2.90

The sand bars, edges of lagoons and mud flats upon the sea-coast appear to be the natural haunts of this widely-distributed and excellent table bird. It is largely replaced, along the Atlantic coast, by its cousin, *M. griseus*; increasing in numbers westward, and, during migration to and from its breeding grounds, very common inland, where it seems to prefer the alkali marshes and pools of water.

These birds are social and generally move in small flocks. They are rather timid, and, as approached, bunch together like sheep, affording an easy shot. The survivors rise with a startled "Tweet, tweet, tweet," but instead of beating a retreat, as a rule return, and hover over the dead and wounded, giving the heartless "pot hunter" another opportunity to slaughter. When much hunted they become wild, but at such times a passing flock are easily drawn within range by putting out decoys, or, from a blind, uttering their call note; curiosity, love of one another, or stupidity, (call it what you may,) makes the birds an easy capture. In flight they are swift and strong; their feeding

habits similar to Wilson's Snipe, but in more open grounds and in deeper waters; and when too deep to wade, I have seen them boldly swim across a narrow channel or strip of water. Mr. Nelson, in his "Report upon Natural History Collections made in Alaska, between the years 1877 and 1881," says:

"This is one of the most common waders on the shore of Norton Sound in summer, and is also present in small numbers all along the Yukon, where suitable locations occur. It is a rather scarce summer resident about Point Barrow, according to Murdock. In spring, the middle of May, as the snow disappears, and the first pale leaves of grass begin to thrust their spear points through the dead vegetable mat on the ground, or as early as the tenth on some seasons, this peculiar Snipe returns to its summer home. At the Yukon mouth I found them on May 12th, when they were already engaged in love making, though the ground was still to a great extent covered with snow, and only here and there appeared a thawed place where they could feed. Toward the end of this month they are plentiful, and their curious habits and loud notes make them among the most conspicuous denizens of the marshes. At the Yukon mouth, on May 28th, I came across a female busily at work, preparing a little hollow in a tussock for her eggs, and, as I drew near, she moved a little to one side and uttered a sharp, querulous note, as if protesting against the intrusion. We took the hint and left her; but a second visit, some days later, showed the spot deserted. These are very demonstrative birds in their love making, and the last of May and first of June their loud cries are heard everywhere about their haunts, especially in morning and evening.

"Two or three males start in pursuit of a female, and away they go, twisting and turning, here and there, over marsh and stream, with marvelous swiftness and dexterity. At short intervals, a male checks his flight for a moment to utter a strident "Peet-û-weet; wee-too, wee-too;" then on he goes full tilt again. After they have mated, or when a solitary male pays his devotions, they rise fifteen or twenty yards from the ground, where, hovering upon quivering wings, the bird pours forth a lisping

but energetic and frequently musical song, which can be very imperfectly expressed by the syllables "Peet-peet, pee-ter-wee-too, wee-too, pee-ter-wee-too, pee-ter-wee-too, wee-too, wee-too." This is the complete song, but frequently only fragments are sung, as when the bird is in pursuit of the female.

"June 16th, while crossing a tussock-covered hill top, over a mile from any water, I was surprised to see a female of this species flutter from her nest about six feet in front of me, and skulk off through the grass with trailing wings and depressed head for some ten or fifteen yards, then stand nearly concealed by a tuft of grass, and watch me as I pillaged her home of its treasures."

The eggs, four in number (set No. 299), rested in a shallow depression formed by the bird's body in the soft moss, and without a trace of lining. These eggs measure, respectively: 1.80x1.21, 1.70x1.20, 1.69x1.20, 1.72x1.23. A second set of four (No. 328), taken on lower ground, June 20th, the same season, measure: 1.80x1.22, 1.72x1.23, 1.87x1.24, 1.83x1.25; and set No. 222, from a boggy flat, but with no nest except the dead grass naturally found on the place occupied, was taken June 13th, the same season, and measure: 1.73x1.23, 1.72x1.23, 1.70x1.22, 1.72x1.22. The ground color varies from a greenish clayey olive to a light grayish or clay color. The spots are large, well defined, and scattered sparsely, except about the tip of large end, where they are crowded. These spots are dark umber brown, and present a striking contrast to the ground color. All the eggs mentioned above were fresh, but the young are full grown and on the wing with their parents the last of July, and the first of August finds the adults rapidly changing their breeding dress for that of winter, and gathering into flocks. By the first of September they are in perfect winter dress, and frequent muddy flats, the edges of tide creeks, and other places, exactly as they do in their passage south or north, in middle latitudes. They have the same unsuspecting ways here as there, and may be shot at again and again, as they keep about their wounded comrades.

GENUS **MICROPALAMA** BAIRD.

"Form slender, the legs very long, the bill long and much compressed, the anterior toes all webbed at the base. Tarsus nearly twice as long as the middle toe, which is a little shorter than the bare portion of the tibiae, this scutellate before and behind, like the tarsus. Bill slender, straight, about equal to the tarsus, greatly compressed, except at the end, which is decidedly expanded laterally. Tail nearly even, but the central and exterior feathers usually perceptibly longer than the rest. Wings long and pointed.

"The present genus, with a basal membrane to all the anterior toes, as in *Ereunetes*, has this a little more deeply emarginate; the bill and legs much longer; the former more curved. The bare portion of the tibia is covered before and behind by transverse scutellæ, like the tarsus. The tail is nearly even, with a double emargination. The middle toe is not two-thirds the length of the tarsus, but about equal to the bare portion of the tibia. The bill is much pitted at the end in the dry skin.

"In many respects this species approaches the Snipes, and its true place is probably very near *Macrorhamphus*. The legs, however, are much longer, and equal to the bill, instead of being much shorter."

Micropalama himantopus (BONAP.).

STILT SANDPIPER.

PLATE X.

Migratory, rare. Arrive in April; return the last of August to middle of September.

B. 536. R. 528. C. 611. G. 243, 76. U. 233.

HABITAT. Eastern North America, west to the Rocky Mountains; south in winter to Brazil, Peru and West Indies; breed far northward.

SP. CHAR. "*Adult, summer plumage:* Above, variegated with black, whitish gray and pale buff, the first prevailing on the back and scapulars; wings rather dark gray, the feathers edged with paler; primaries dusky slate; rump grayish, the feathers with darker centers; upper tail coverts white, the longer ones barred, the anterior ones longitudinally marked with dusky; middle tail feathers light gray, the others varied longitudinally with white and pale gray; pileum dusky, streaked with whitish; a dark brown loreal stripe from base of maxilla to eyes; auriculars and patch on each side the occiput light cinnamon rufous; lower parts dirty white, the throat and jugulum streaked (other portions transversely barred) with dusky; lining of the wing and axillars white, the latter marked with gray. *Adult, in winter:* Above, uniform ash gray, the upper tail coverts, tail and wings only as in the summer plumage; superciliary stripe and lower parts white, the jugulum, sides of the neck and crissum streaked with gray. *Young:* Back and scapulars blackish, all the feathers widely bordered with buffy white, the middle of the back tinged with rusty; wing coverts bordered with pale buff and white; upper tail coverts nearly immaculate white; pileum streaked with dusky, pale buff and grayish; nape nearly uniform ash gray; lower parts soiled white, the breast and sides more or less strongly suf-

fused with buff, the jugulum, sides of the neck and flanks indistinctly streaked with grayish; bill black; iris brown; feet dull yellowish green; claws black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.25	15.50	5.00	2.00	1.60	1.50
Female	9.25	16.75	5.25	2.20	1.75	1.65

I have met with this rare species in the State on several occasions, at all times in small flocks, and along the edges of old channels of rivers or muddy pools of water, in which it wades while feeding; immersing the head and feeling with its sensitive bill in the thin mud for worms and minute forms of life. It moves about rather slowly as compared with the true Sandpiper, but in an easy, graceful manner. In resting, draws its head down between the shoulders and often stands upon one leg; and once when approaching a pair of these birds thus resting, they both dropped to the ground, and hugged it closely, in hopes that I would pass them unobserved, and so remained until I was within at least ten feet, when, with a sudden spring, they launched into the air, uttering a sharp "Tweet, tweet," and winged themselves away with the speed of an arrow.

These birds are said to breed in the Arctic regions throughout their range. The following, taken from "North American Water Birds," is the only reliable description given that I can find of their nests and eggs:

"Mr. McFarlane found this species breeding at Rendezvous Lake, in the Arctic region, June 27th. In situation and composition they are said to be similar to others previously met with. The nest contained four eggs, the female having been shot on leaving it. The contents of the eggs were slightly developed. This bird was everywhere very rare, except on the Arctic coast at Franklin Bay, where it was found tolerably abundant. At Island Point, July 5th, he obtained two young birds in the down, with the female parent. Both parents displayed much courage and ingenuity in defense of their young, two of which were thus enabled to escape. He afterwards, in the same neighborhood, procured other young in the down, with both parents. Another nest obtained at Langston Harbor, in July, 1865, contained four eggs quite fresh. The nest was a mere

depression in the ground, lined with a few withered leaves and grasses.

“A set of eggs (S. I. No. 9389), obtained on the Arctic coast by Mr. MacFarlane, June 22d, 1863, was in a nest composed of decayed leaves, and placed in a hollow partly concealed by tufts of grass. The eggs are three in number, of an oblong, pyriform shape, and have a ground-color of a light and bright drab or grayish white, with large, rounded and scattered markings of bistre; these markings are larger and more numerous at the obtuse end. The eggs range from 1.47 to 1.50 inches in length, and have a breadth of one inch. Another set (No. 11331), obtained in 1866, have spots that are larger and more confluent about the greater end, and are more rounded in shape, varying between 1.45 and 1.46 inches in length, and in breadth between 1.05 and 1.10 inches.

GENUS **TRINGA** LINNÆUS.

“Body robust; bill and legs short, the former straight, widened terminally, and scarcely longer than the head; tarsus about equal to the bill, or a little shorter; middle toe about two-thirds the tarsus; wings long and pointed, reaching beyond the end of the tail.”

SUBGENUS **TRINGA**.

Middle pair of tail feathers not longer than the rest. (*Ridgway*.)

Tringa canutus LINN.

KNOT.

PLATE X.

Migratory; rare. Two specimens, shot in the spring of the year, at Neosho Falls, by Col. W. L. Parsons, are the only ones to my knowledge captured or seen in the State.

B. 526. R. 529. C. 626. G. 244. 77. U. 234.

HABITAT. Northern hemisphere, chiefly upon the seacoasts; south in winter nearly throughout the southern hemisphere; breeds in high northern latitudes.

SP. CHAR. Summer adult with lower parts uniform light cinnamon. Above, light grayish, irregularly varied with black and tinged with pale rusty; rump and upper tail coverts white, irregularly barred and spotted with dusky; distinct superciliary stripe, and lower parts generally, uniform pale vinaceous cinnamon, paler on belly; under wing coverts, axillars, flanks and lower tail coverts white, usually more or less marked with dusky. *Winter plumage:* Above,

plain ash gray, the feathers with indistinct darker shaft streaks; rump and upper tail coverts white, barred with dusky; lower parts white, the throat, fore-neck, chest and sides streaked and otherwise marked with dusky. *Young:* Above, ash gray, each feather bordered with whitish and with a subedging of dusky; lower parts whitish, sometimes tinged with dull buffy on breast, etc.; the neck and chest streaked and flecked with dusky, the sides indistinctly barred and spotted with the same; otherwise like adult. *Downy young:* Fore-head warm buff, with a central black line; over the eye a double black line; crown, from center backwards, black, slightly varied with rufous and dotted with buff; nape creamy buff slightly varied with blackish; upper parts black, slightly varied with reddish brown and profusely dotted with creamy white; under parts very slightly washed with warm buff. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.25	20.50	6.25	2.40	1.20	1.40
Female . . .	10.50	20.75	6.35	2.50	1.20	1.40

Iris dark brown; bill and claws black; legs and feet dark green.

This cosmopolitan species is quite common along the Atlantic coast, and from Alaska northward, but is seldom met with inland, especially west of the Mississippi.

In the early part of September, 1884, I had a very good opportunity to observe these birds near Chatham, Massachusetts, as they were feeding along the sandy beach upon minute shellfish and other small forms of life that are loosened and brought to the surface by the wash of the waters upon the shore; a very pretty and lively sight, as they swiftly followed and retreated from the waves that continually roll upon the beach. I also noticed a small flock of these birds probing for food in a marshy pool of water on Monomoy Isle; occasionally wading beyond their depth, apparently floating and swimming with ease. They usually move in flocks, and when startled all spring into the air with a sharp "Tweep, tweep," and swiftly fly in a compact, wavy manner.

These birds are reported as breeding along the Arctic coast north to Greenland, and young birds have been captured. Morris, in his "British Birds," Vol. IV, p. 293, says: "A tuft of grass serves as a depository for the eggs. They are stated to be four in number, of a light yellowish brown color, marked at the larger end with gray and reddish spots, forming more or less of a belt, and less spotted towards the smaller end." But



PLATE XI.

1. PECTORAL SANDPIPER, Female. 2. LEAST SANDPIPER, Male. 3. BAIRD'S SANDPIPER, Male. 4. SEMIPALMATED SANDPIPER, Male. 5. RED-BACKED SANDPIPER, Male. 6. SEMIPALMATED SANDPIPER, Male. 7. MARBLED GODWIT, Male. 8. MARBLED GODWIT, Female. 9. HUDSONIAN GODWIT, Male. 10. HUDSONIAN GODWIT, Female. 11. WESTERN WILLET, Male. 12. SOLITARY SANDPIPER, Male. 13. YELLOW-LEGS, Male. 14. SOLITARY SANDPIPER, Male. 15. WESTERN WILLET, Male. 16. BARTRAMIAN SANDPIPER, Male.

the following is the only authentic description given of its eggs, or rather egg, by Dr. Merriam, in "The Auk," Vol. 2, p. 313:

"Lieut. A. W. Greeley, U. S. A., commander of the late expedition to Lady Franklin Sound, succeeded in obtaining the long-sought-for egg of this species, and has had the extreme kindness to ask me to publish the first account of it. Lieut. Greeley writes me: 'The specimen of bird and egg were obtained in the vicinity of Fort Conger, latitude 81° 44' N. The egg was 1.10 inch (28 mm.) in the longer axis, and 1.00 inch (25.40 mm.) in the shorter. Color light pea green, closely spotted with brown, in small specks about the size of a pin head.'"

SUBGENUS ACTODROMAS KAUP.

"Size medium to very small (smallest of the family); form graceful; legs and bill slender, the latter straight and little (if any) longer than the tarsus. Tarsus decidedly longer than the middle toe with its claw; toes slender, completely cleft; wings long and pointed, their ends, when closed, reaching beyond the tip of the tail.

"Although the species of this genus vary greatly in size, they all agree very closely in the details of structure."

Tringa maculata VIEILL.

PECTORAL SANDPIPER.

PLATE XI.

Migratory; abundant. Arrive the last of March to middle of April; return early in September.

B. 531. R. 534. C. 616. G. 245, 78. U. 239.

HABITAT. Nearly the whole of America, but in summer confined to Arctic and sub-Arctic regions. Occasionally in Europe.

SP. CHAR. "*Adult, in summer:* Above, light clay color, the crown, back, scapulars and tertials washed with light rufous or rusty ochraceous; the feathers black centrally, producing conspicuous streaks, which widen into spots on the scapulars and back; rump and middle upper tail coverts brownish black; lateral upper tail coverts white, with dusky shaft streaks; middle tail feathers dusky, edged with lighter; other rectrices pale brownish gray, bordered with white; wing coverts light grayish brown, with paler borders and darker centers; a light superciliary stripe, and a darker loreal one. Cheeks, sides of neck, whole jugulum and breast pale clay color or light grayish buff, streaked with dusky; sides sparsely streaked; remaining lower parts immaculate white; basal half of bill dull greenish yellow. *Adult, in winter:* Similar to summer plumage, but the rusty tint above almost or wholly absent, and the black markings less sharply defined. *Young, first plumage:* Quite similar to the summer adult, but the

scapulars and outer interseapulars conspicuously tipped externally with white, the breast, etc., more distinctly buff, and rather more narrowly streaked."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	9.00	16.75	5.40	2.40	1.00	1.10
Female . . .	8.50	16.00	5.10	2.30	1.00	1.05

Iris brown; bill brown, greenish at base; legs and feet greenish yellow; claws dark brown.

This species inhabits low, wet lands, muddy flats and the edges of shallow pools of water, seldom frequenting sandy shores. These birds move in flocks, but, while feeding, scatter as they move about, picking and probing here and there for their food, which consists of worms, insects, larvæ, minute shellfish, and occasionally tender rootlets and buds; but at the report of a gun, or any sudden fright, spring into the air, utter a low whistling note, quickly bunch together, flying swift and strong, usually in a zigzag manner, and when not much hunted often circle and drop back within shot; for they are not naturally a suspicious or timid bird, and when quietly and slowly approached, occasionally—like the Knot—try to hide by squatting close to the ground. It is only of late that we have had any authentic accounts of their breeding habits, and it therefore gives me great pleasure to present Mr. Nelson's interesting description of the same, as published in his report upon "Natural History Collections in Alaska," viz.:

"The last of May, 1879, I pitched my tent on a lonely island in the Yukon delta, and passed several weeks in almost continual physical discomfort, owing to the cold rain and snow storms which prevailed. However, I look back with pleasure upon the time passed here among the various water fowl, when every day contributed new and strange experiences.

"The night of May 24th, I lay wrapped in my blanket, and from the raised flap of the tent looked out over as dreary a cloud-covered landscape as can be imagined. The silence was unbroken save by the tinkling and clinking of the disintegrating ice in the river, and at intervals by the wild notes of some restless Loon, which arose in a hoarse, reverberating cry and died away in a strange, gurgling sound. As my eyelids began to droop and the scene to become indistinct, suddenly a low, hol-

low, booming note struck my ear and sent my thoughts back to a spring morning in northern Illinois, and to the loud vibrating tones of the Prairie Chickens. Again the sound arose, nearer and more distinct, and with an effort I brought myself back to the reality of my position, and, resting upon one elbow, listened. A few seconds passed, and again arose the note; a moment later, and, gun in hand, I stood outside the tent. The open flat extended away on all sides, with apparently not a living creature near. Once again the note was repeated close by, and a glance revealed its author. Standing in the thin grass ten or fifteen yards from me, with its throat inflated until it was as large as the rest of the bird, was a male *A. maculata*. The succeeding days afforded opportunity to observe the bird as it uttered its singular notes, under a variety of situations, and at various hours of the day or during the light Arctic night. The note is deep, hollow and resonant, but at the same time liquid and musical, and may be represented by a repetition of the syllables, "Tōō-û, tōō-û, tōō-û, tōō-û, tōō-û, tōō-û, tōō-û, tōō-û." Before the bird utters these notes it fills its œsophagus with air to such an extent that the breast and throat is inflated to twice, or more, its natural size, and the great air sac thus formed gives the peculiar resonant quality to the note.

"The skin of the throat and breast becomes very flabby and loose at this season, and its inner surface is covered with small globular masses of fat. When not inflated, the skin loaded with this extra weight, and with a slight serous suffusion which is present, hangs down in a pendulous flap or fold exactly like a dewlap, about an inch and a half wide. The œsophagus is very loose and becomes remarkably soft and distensible, but is easily ruptured in this state, as I found by dissection. In the plate accompanying this report, the extent and character of this inflation, unique at least among American waders, is shown. The bird may frequently be seen running along the ground close to the female, its enormous sac inflated, and its head drawn back and the bill pointing directly forward, or, filled with spring-time vigor, the bird flits with slow but energetic wing strokes close along the ground, its head raised high over the shoulders

and the tail hanging almost directly down. As it thus flies it utters a succession of the hollow, booming notes, which have a strange ventriloquial quality. At times the male rises twenty or thirty yards in the air, and, inflating its throat, glides down to the ground with its sac hanging below, as is shown in the accompanying plate. Again he crosses back and forth in front of the female, puffing his breast out and blowing from side to side, running here and there, as if intoxicated with passion. Whenever he pursues his love making, his rather low but pervading note swells and dies in musical cadences, which form a striking part of the great bird chorus heard at this season in the north."

Mr. Murdock, to whom we are indebted for the first account of its nest and eggs, says the birds breed in abundance at Point Barrow, Alaska, and that "The nest is always built in the grass, with a decided preference for high and dry localities like the banks of gullies and streams. It was sometimes placed at the edge of a small pool, but always in grass and in a dry place, never in the black clay and moss, like the Plover and Buff-breasted Sandpipers, or in the marsh, like the Phalaropes. The nest was like that of the other waders, a depression in the ground lined with a little dry grass."

All the complete sets of eggs we found contained four. The following is a description of the eggs, obtained from the examination of eighteen sets:

They are pointedly pyriform, like those of the other small waders. The following measurements, in inches, indicate the size, shape and limits of variation: 1.58x1.06, 1.44x1.11, 1.42x1.08, 1.54x1.02. In color and markings they closely resemble the eggs of the other small waders. The ground color is drab, sometimes with a greenish tinge, though never so green as in the egg of *P. alpina americana*, and sometimes a pale bistre brown. The markings are blotchings of clear umber brown, varying in intensity, thickest and sometimes confluent around the larger end, smaller and more scattered at the smaller end. Some of the eggs with brown ground are thickly blotched all over. A single egg in one set of four has the markings almost

as fine as in *A. bairdi*, but the egg is larger and has not the characteristic ruddy hue. All the eggs have the usual shell markings of pale purplish gray and light neutral tint. The eggs may be distinguished from those of the Buff-breasted Sandpiper, which they closely resemble, by their warmer color.

***Tringa fuscicollia* VIELL.**
WHITE-RUMPED SANDPIPER.

PLATE XI.

Migratory; common. Arrive the last of April to first of May, occasionally arriving as early as the last of March, and I have in the "Goss Ornithological Collection" a pair shot the 17th and 22d of May; return early in September.

B. 533. R. 536. C. 617. G. 246, 79. U. 240.

HABITAT. Nearly the whole of America, north to Greenland, south to Falkland Islands, occasionally in Europe; breeds from Labrador and Alaska northward.

SP. CHAR. "*Adult, in summer:* Above light brownish gray, much tinged, particularly on the crown, back and inner scapulars, with light rusty buff or ochraceous, all the feathers black centrally, these markings largest and somewhat V-shaped, or sagittate, on the scapulars, streak-like elsewhere, the streaks broadest on the crown and back; rump dusky blackish, the feathers bordered with light gray; upper tail coverts pure white, in marked contrast, some of the feathers having irregular, sagittate, mostly concealed, spots of dusky. Tail brownish gray, the middle feathers blackish, and all slightly edged with whitish. Wing coverts and tertials brownish gray, lighter on edges and dusky centrally, the shafts nearly black. Superciliary stripe and entire lower parts pure white; auriculars light buff, indistinctly streaked; sides of head and neck, foreneck, jugulum and upper part of breast streaked or dashed with dusky; sides and flanks with larger irregular markings of the same. *Adult, in winter:* Wings, rump, upper tail coverts and tail as in summer plumage; rest of upper parts continuous brownish gray, relieved by rather indistinct mesial streaks of black; streaks on jugulum, etc., less sharply defined than in the summer plumage. *Young, first plumage:* Back and scapulars black, the feathers bordered terminally with pure white, and laterally with ferruginous, those of the middle of the back also tipped with this color; feathers of the pileum and rump, as well as the tertials, also bordered with rusty; wing coverts bordered with pale grayish buff. Otherwise as in the winter plumage, but breast, jugulum, etc., suffused with pale fulvous."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.25	15.00	4.75	2.25	.95	.95
Female . . .	7.20	14.75	4.70	2.10	.95	.95

Iris dark brown; bill black, with base of under reddish flesh color. Legs and feet dark olive brown, claws black.

This species, during migration, is found from the Atlantic coast to the Rocky Mountains. (I have met with the birds in Texas and Eastern Colorado.) The only mention I can find of the birds west of the Rocky Mountains, south of Alaska, is of a single specimen reported from Oakland, California, by Walter E. Bryant, in "The Auk," Vol. 4, p. 78. If as stated, ("feet and legs yellow,") it cannot be this species; but as the birds breed in Northern Alaska, and have been found by Stejneger west on Behring Islands, they will probably prove to be migrants on the Pacific side, though not as common as eastward. > They frequent the sandy beach as well as the marshy shores upon the coast; but inland seem to prefer the edges of pools of water upon the uplands. They move in small flocks, are very social, often associating with other waders; are not as a rule shy or timid, and, when startled, usually fly but a short distance, drop back and run about in an unconcerned and heedless manner, picking up the minute forms of life that usually abound in such places, occasionally uttering a rather sharp, piping "Weet, weet." Their flight is swift and well sustained. ✕

The following description of their nest and eggs is from "North American Water Birds," Vol. I, p. 229: "Mr. L. Kumlin states that this species breeds in Kinguah and Kinguite fords, and in other suitable localities on both shores of Cumberland Sound. Considerable numbers were observed along the beach near Nuboyant, on the west shore, in July, where they were in all probability breeding. Mr. MacFarlane was so fortunate as to meet with several nests, with the eggs, of this species on or near the Arctic coast. One of these, taken July 3d, on the shore of the Arctic Sea, contained four eggs with very large embryos. Another, found on the following day, contained three eggs. A third, found June 29th, on the Barren Grounds, was a mere depression in the ground, lined with a few decayed leaves, containing four eggs with very large embryos. A fourth, obtained on the banks of a small river, was composed of a few decayed leaves, and held four eggs.

"Eggs of this species found on the Barren Grounds, near the Arctic coast, by Mr. MacFarlane (S. I. No. 11329), are pyri-

form in shape, and have a ground color of a rufous drab, marked with bold patches of dark sepia brown, interspersed with spots in which this shade is deepened almost into blackness, and which are collected in confluent groupings around the larger end. These eggs measure 1.35 inches in length by .95 in breadth."

***Tringa bairdii* (COUES).**

BAIRD'S SANDPIPER.

PLATE XI.

Migratory; quite common. Arrive the last of March to first of May; remain often late into May; begin to return the last of August, occasionally remain until November.

B. —. R. 537. C. 615. G. 247, 80. U. 241.

HABITAT. America in general, but chiefly the interior; breeding along the Arctic coast, and migrating south in winter to Chili and Argentine Republic.

SP. CHAR. "*Adult, in summer:* Above, variegated with black and grayish buff, the former prevailing, in the form of irregular, somewhat diamond-shaped spots on the back and scapulars, the buff occupying most of the border of the feathers, and sending indentations toward the shaft; elsewhere, the black forms distinct streaks, widest on the crown and anterior part of the back; rump and upper tail coverts dusky brownish black, feathers bordered with dull clay color, the exterior ones of the latter chiefly white, with irregular U-shaped markings of dusky; tail light brownish gray, the middle feather nearly black, all narrowly edged with whitish; wing coverts and tertials grayish brown, with lighter edges and darker centers; remiges dull slate; lower parts white, the sides of the head and neck, the jugulum and anterior portions of the sides streaked with dusky. *Adult, in winter:* Above, continuous grayish clay color, the feathers with darker mesial streaks; rump and middle upper tail coverts dusky, the feathers bordered terminally with dull clay color; lateral upper tail coverts brownish white; beneath, brownish white, the jugulum, breast, sides (anteriorly) and sides of the neck deeply suffused with clay color or dull buff. *Young, first plumage:* Above, grayish clay color, the scapulars and interscapulars blackish centrally, and conspicuously bordered with whitish terminally; the feathers of the crown and nape streaked with dusky; wing coverts, rump, etc., much as in the winter plumage; sides of the head and neck, the jugulum and breast pale clay color, rather indistinctly streaked with dusky; other lower parts white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.00	14.70	4.80	1.85	.85	.85
Female . . .	7.20	15.00	4.90	2.00	.85	.85

Iris dark brown; legs, feet and claws black.

These birds are rarely met with upon either coast, but are quite common inland, especially in the Missouri region and west

to Nevada. In habits they are similar to the White-rumped (which they so closely resemble), but are more inclined to wander from the water's edge. I have flushed the birds on high prairie lands, at least a mile from water.¹

They are said to breed all along the Arctic coast, west of Hudson's Bay to Alaska. The following description of their nest and eggs is taken from "North American Water Birds:"

"This species was found breeding on the Barren Grounds, near the Arctic coast, June 24th, by Mr. MacFarlane. The nest had been made upon the ground, in a swampy district between two small lakes, and was composed of a few decayed leaves laid loosely in a small hole or depression, shaded by a tuft of grass. The female bird glided from the nest, on being approached, passing closely to him, and then fluttering along, dropping her wings as if wounded, endeavoring thus to lead him away from the nest. This was a rare bird in that quarter. The eggs of this species are usually four in number. One set (S. I. No. 14085) exhibited the following measurements: 1.40x.99, 1.35x1.02, 1.32x.98 and 1.31x.98. Their ground color is a light drab, generally and very uniformly sprinkled with dottings, spots and a few larger confluent blotches of a bright sepia brown. These are occasionally larger and a little more numerous at the obtuse end, but generally are distributed with very little difference over the whole surface of the egg."

***Tringa minutilla* VIEILL.**

LEAST SANDPIPER.

PLATE XI.

Migratory; abundant. Arrive the last of March to first of May; begin to return early in August, a few occasionally remaining into November.

B. 532. R. 538. C. 614. G. 248, 81. U. 242.

HABITAT. America in general; breeding throughout the Arctic regions, also in sub-Arctic districts.

SP. CHAR. "*Adult, summer plumage.* Back and scapulars black, the feathers bordered and somewhat barred (not continuously, and mostly beneath the surface), with rusty ochraceous, the tips of some of the feathers often whitish; rump and middle upper tail coverts brownish black; lateral upper tail coverts white, with wedge-shaped markings of grayish; middle tail feathers dusky, with paler

edges; other rectrices light brownish gray, with white shafts. Crown light grayish fulvous or ochraceous, heavily streaked with black; wing coverts brownish gray, with dark centers and paler edges, the shafts blackish; tertials edged with ochraceous; primaries dusky. A light superciliary stripe, and a darker one on side of the head; neck and jugulum very pale grayish fulvous, or fulvous ashy streaked with dusky; sides and crissum narrowly streaked; other lower parts immaculate white. *Adult, in winter:* Above, rather dark brownish gray, the feathers with indistinctly darker centers; rump, etc., as in summer plumage. Superciliary stripe and lower parts white, the jugulum light ashy, indistinctly streaked. *Young, first plumage:* Very similar to the summer plumage of the adult, but many of the scapulars and interscapulars tipped with white, these feathers without any bars; wing coverts bordered with ochraceous. Jugulum suffused with pale fulvous, and obsoletely streaked.

"This abundant and extensively diffused species resembles very closely, both in its small size and in its colors, at all seasons, the equally common and widely distributed Semipalmated Sandpiper, *Ereunetes pusillus*. It may be immediately distinguished, however, by the complete cleft toes, the other species having all the anterior toes webbed at the base."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.50	11.00	3.40	1.60	.70	.65
Female . . .	5.70	11.50	3.50	1.60	.70	.70

Iris brown; bill, legs and feet slate green, the latter with yellowish hue; claws black.

This lively, social little Sandpiper is quite common throughout its range. It has been found breeding as far south as Sable Island, Nova Scotia, but its usual breeding grounds are north from Labrador and Alaska to Greenland; wintering from California and the Gulf States southward. In habits it differs little if any from its genus, but is more restless and active; running nimbly about, often with the larger waders, feeding around and beneath them, apparently heedless of danger; and many a time, while watching for other birds, they have passed close to my feet; but at the least motion the whole flock would spring into the air like a flash, with a startled "Peep, peep," and in a compact form swiftly sweep about in an uncertain manner, canting from side to side, showing rapidly the white beneath and dark above, a wavy, pretty sight, the white at times fairly glistening in the sunlight. When migrating or going any distance, their flight is quite steady and direct. Audubon, who found the birds breeding in Labrador, says: "At all periods, excepting those at which they have nests containing eggs, or young so small and

delicate as to require all the care of their parents, the flight of the present species resembles that of the common Snipe, *Scolopax wilsonii*; but when startled from the nest, or from any place in the immediate vicinity, it rises on wing and moves off low over the ground with deeply incurved wings, and with a whirling motion of these organs, which, if as rapid as that of a Partridge, would appear quite similar; but, on such occasions, our bird moves slowly before you, and instead of uttering the note of independence, as it were, which it emits at other times while freely and fearlessly traveling, it gives out sounds weakened by grief or anxiety, for the purpose of inducing you to follow it. If on the ground it acts in a similar manner, moves off slowly, and limping as if crippled, and this at times quite as much as if you had really come upon it while on its nest, or surprised it with its young."

Their nests are placed on the ground, a slight depression scantily lined with leaves and grasses. Eggs three or four; ground color cream buff to light drab, spotted and blotched irregularly with varying shades of brown, thickest about the larger end. A set of three eggs, collected July 2d, 1882, by Mr. MacFarlane, at Fort Anderson, near the Arctic coast, measure: 1.10x.85, 1.12x.85, 1.12x.86; in shape, pyriform.

SUBGENUS PELIDNA CUVIER.

"Bill slender, longer than the head, deep through the base, compressed, scarcely or not at all expanded at the tip, and decidedly decurved terminally. Tarsus shorter than the bill, longer than the middle toe. Wings reaching beyond end of tail."

Tringa alpina pacifica (COUES).

RED-BACKED SANDPIPER.

PLATE XI.

Migratory; rare. Arrive in April; return in August.

B. 530. R. 539a. C. 624. G. 249. 82. U. 243a.

HABITAT. North America in general; eastern Asia; breeding in the Arctic regions, north to Greenland. Winter in California, the Gulf States and southward.

SP. CHAR. "*Adult, in summer:* Crown, back, scapulars, rump and upper tail coverts light rufous, the crown streaked (other parts spotted) with black; wing coverts brownish gray, the greater broadly tipped with white. Head (ex-

cept crown), neck, jugulum and breast grayish white, streaked with dusky; abdomen black; sides, flanks, anal region, crissum and lining of the wing pure white, the sides, flanks and crissum sparsely streaked. *Adult and young, in winter:* Above, entirely plain ash gray, sometimes with very indistinct dusky shaft streaks; indistinct superciliary stripe and lower parts white, the neck and jugulum indistinctly streaked with grayish, the sides, flanks and crissum sometimes sparsely streaked. *Young:* Back and scapulars black, the feathers broadly bordered with rusty ochraceous, this becoming paler or even white on the ends of some of the feathers; lesser and middle wing coverts bordered with buff; rump plain brownish slate; upper tail coverts darker, tipped with rusty; crown light rusty, streaked with black. Head and neck (except crown and throat) dull dingy buff, indistinctly streaked with dusky; remaining lower parts, including throat, white, the breast and belly with numerous irregularly cordate spots of black, the flanks, crissum and lining of the wing immaculate. Bill and feet black; iris dark brown.

"There is a considerable amount of individual variation in this species, especially noticeable in the extent and continuity of the black abdominal area, the distinctness of the black markings above, and the depth of the rufous tint; not infrequently the latter is mixed with grayish. In the winter plumage, some examples have the sides and crissum narrowly streaked, while in others these parts are immaculate."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.25	15.00	4.65	2.20	1.05	1.55
Female . . .	8.50	15.50	4.75	2.20	1.05	1.55

I have met with this species at Cape Cod, Florida, Texas, Kansas, California, and at Neah Bay, Washington; at the latter place the birds were in breeding plumage, May 10th to 15th, 1882. In all cases they were in small flocks, and not abundant.

In habits they are not noticeably different from others of the family. The following interesting description of their breeding habits, etc., is taken from Nelson's "Report upon Natural History Collections made in Alaska," 1877 to 1881:

"In early seasons the first of these birds reach the Yukon mouth and the shores of Norton Sound by the 10th of May, and by the 25th of this month they are in full force. They arrive in full breeding dress, and are generally in small flocks, which soon break up, and the birds scatter in twos and threes over the moss and grass grown 'tundra,' to pair and attend to their summer duties. They nest from the first of June to the first of July, and I secured a set of four fresh eggs on the third of this month, in 1877.

"The young are mostly on the wing toward the end of July,

and the birds begin to gather into flocks along the muddy edges of the brackish pools and the banks of tide creeks. Very soon after this they begin to lose their summer plumage, and the moult continues until the last of September or first of October. During the first of October they are very common in flocks, and singly among the lakes and streams; a little later, and the borders of these situations are edged with ice, and most of the birds leave for the south, but some of the hardier ones betake themselves to the sea shore, where they join with Coues' Sandpiper, and remain as late as the 12th or 13th of the month.

“Soon after they arrive in the spring, they are engaged in pairing, and the males may be seen upon quivering wings flying after the female, and uttering a musical, trilling note, which falls upon the ear like the mellow tinkle of large water drops falling rapidly into a partly filled vessel. Imagine the sounds thus produced by the water run together into a steady and rapid trill, some five to ten seconds in length, and the note of this Sandpiper is represented. It is not loud, but has a rich, full tone, difficult to describe, but pleasing to hear among the discordant notes of the various water fowl, whose hoarse cries arise on all sides. As the lover's suit approaches its end, the handsome suitor becomes exalted, and in his moments of excitement he rises fifteen or twenty yards, and, hovering on tremulous wings over the object of his passion, pours forth a perfect gush of music, until he glides back to earth exhausted, but ready to repeat the effort a few minutes later. The female coyly retreats before the advances of the male, but after various mishaps, each bird finds its partner for the summer, and they start off house-hunting in all the ardor of a rising honeymoon. They generally choose some dry knoll, or other slight elevation overlooking the neighboring lakes and pools. Here, upon a bed of last year's grasses, but without the trouble of arranging a formal nest, the female deposits three or four large eggs, of a pale greenish varying to pale brownish clay color with dull chocolate and umber brown spots and blotches.

“In some specimens the markings are rather small, and numerous over the entire shell, but in all cases the larger end has

the usual predominance of blotching. In other specimens the markings form blotches or large spots, rather sparingly distributed at the small end, but nearly hiding the ground color at the larger end. There is considerable variation in size as well as color among these eggs, as the following measurements show: 1.50x1.10, 1.39x.98, 1.45x.95, 1.50x1.08. After the eggs are laid the male evidently becomes a wiser and a sadder bird, for his merry trill is heard no longer, and, should some wandering naturalist happen along and start a sitting bird from the eggs, the chances are equal that he finds the female is not "at home," but that it is the poor male who has fallen a victim to his faithful care of the nest.

"On two occasions I started these birds from their eggs, and in each instance the parent fluttered and stumbled along the ground, trying to distract my attention, and in each case examination showed it to be a male, and the two large, bare patches on the breast showed that they were accustomed to the task. Females shot at the same season showed the same marks of incubation, so it is evident that the work is shared by the two parents. The earliest nest found by me was on June 6th, and the latest on July 3d; in both the eggs were fresh."

GENUS **EREUNETES** ILLIGER.

"Size small; anterior toes webbed at the base; a well-developed hind toe. Bill about as long as or a little longer than the head, straight, somewhat expanded at the end, about as long as the tarsus; middle toe more than half as long as the tarsus; bare portion of tibia nearly equal to the middle toe.

"The bill of *Ereunetes* is quite stout and considerably expanded, by which it is readily distinguished from *Actodromas minutilla* independently of the semipalmated feet. The tarsus and middle toe are about equal; the tibia denuded anteriorly for about two-thirds the length of the tarsus. The basal membrane of toes is more scalloped out interiorly than exteriorly; the notch externally not quite as deep as the first joint, although the membrane extends beyond the second. There is a tendency to hexagonal subdivision in the bare portion of tibia anteriorly. The tail is doubly emarginate."

Ereunetes pusillus (LINN.).

SEMIPALMATED SANDPIPER.

PLATE XI.

Migratory; not uncommon. Arrive the last of April to middle of May; return in August.

B. 535. R. 541. C. 612. G. 250, 83. U. 246.

HABITAT. Northern and eastern North America, west during migration to the Rocky Mountains; south in winter to the West Indies and South America; breeding from Labrador and the western shores of Hudson's Bay to northern Alaska.

SP. CHAR. "*Adult, breeding plumage:* Upper surface light grayish brown, the sides of the pileum and edges of some of the scapulars and interscapulars tinged with pale buffy cinnamon, but this sometimes almost wholly absent; pileum heavily streaked and dorsal region heavily spotted with black, the latter color occupying the central portion of each feather. A streaked white superciliary stripe and dusky loreal space, the latter usually very distinctly defined along its upper edge, the lower part broken into streaks, which extend backward over the cheeks; auriculars streaked grayish brown. Lower parts pure white, the jugulum and breast tinged with ashy and streaked with dusky. *Winter plumage:* Above, brownish gray or cinereous, relieved by dusky shaft streaks; superciliary stripe and lower parts pure white, the jugulum faintly streaked. *Young:* Similar to the summer adult, but jugulum tinged with pale grayish buff, and without well-defined streaks or spots, the scapulars and interscapulars bordered terminally with white, and the brown usually less rusty. *Downy young:* Forehead dingy white, divided by a mesial line of black; crown light chestnut, marbled posteriorly with black and white; occiput mottled whitish. A distinct loreal line of black, forking just before the eye, the upper branch running toward the anterior corner of the eye, the other inclining downward. Throat fulvous white; other lower parts whitish, nearly pure on the abdomen. Upper parts pale fulvous brown laterally, black centrally, the whole surface thickly bespangled with fine, downy tufts terminating the downy filaments."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.00	11.75	3.80	1.65	.85	.75
Female . . .	6.40	12.80	4.00	1.75	.85	.75

Iris dark brown; bill, legs and feet greenish black; claws black.

I have often met with this species upon the Atlantic and Gulf coasts and inland. A rather restless bird, that upon its feeding grounds is continually rising and flying in a rapid, wavy, circling manner, and dropping back and running about, picking and probing for the minute forms of life found along the sandy beach, as well as upon the muddy flats and edges of pools of water. The following full and complete description of its nests, eggs, etc., is taken from "North American Water Birds:"

"Mr. MacFarlane found this species breeding very abundantly on the Arctic coast and on the islands in the bays and along the shores of the Arctic Sea. Some were also found

nesting in the Barren Grounds west of Franklin Bay. The nests were in most instances mere depressions in the ground, lined with a few grasses and leaves, dry and partially decayed, and were almost always near small pools of salt or brackish water, or inland near the edge of small ponds. Sometimes the female would glide from her nest, and, pretending to be disabled, would seek to entice away the intruder. If suddenly startled, she would frequently utter disturbed cries. The eggs were usually four in number, and were found from the 20th of June to the 10th of July. At times the nests were hidden in tufts of grass, but not always. When driven from her nest, the female, if unmolested, would almost immediately return. In reference to one nest, procured June 30th, on the coast of Franklin Bay, Mr. MacFarlane writes: 'The nest from which these eggs were taken was situated between two small, brackish lakes near the sea shore. One of our party saw the female get off; and when the nest was approached by him she uttered a shrill note of alarm. After searching about for a few minutes, he failed to find the eggs; and he then determined to hide himself, and from his concealment ascertain where the female would alight on her return. In a short time she was seen to return, accompanied by three companions, all of whom looked and moved about; but not discovering anything, seemed to hold a brief consultation, after which they separated, the female to her nest. Another search failed to discover the eggs; and the female again returned with the same birds, who appeared to be in a state of great excitement, judging from the clatter they kept up. After awhile they again separated, when the nest was found and the parent secured. The report of the gun brought the others once more to the spot; but they beat a hasty retreat. The nest was a mere depression in the midst of some hay, and lined with the same and a few withered leaves.'

"The eggs of this species exhibit great variations in their appearance, in consequence of the difference in their size, the manner of distribution and the number of the spots. The ground is light drab, and the markings are of a pure bright sepia. In one set (S. I. No. 11272) of four eggs, the nest—a

mere depression in the ground on the border of a small lake in the midst of marshy ground—was lined with withered grasses. In this set the markings are large, pronounced and distinct, sparsely distributed around the smaller end, and more numerous and occasionally confluent about the obtuse end. They are pyriform in shape, and the smaller end is very sharply defined. They average 1.25 inches in length, by .86 in breadth. Another set (No. 11271) of four eggs, in a nest found placed between two small lakes, and lined with withered grasses and leaves, was obtained in the Barren Grounds, near Fort Anderson. In these eggs the spots are much finer, more numerous about the smaller end, and there very fine, a little larger and more confluent about the larger extremity, and nearly concealing the grayish white or light drab-colored ground. These measure 1.15 inches by .85. Four eggs (No. 11273) found on an island in Franklin Bay, July 4th, have markings still more minute and numerous, universally diffused, and more or less confluent over the entire egg, concealing the ground, and having apparently very little resemblance to No. 11272. Four eggs (No. 17041) were found by Mr. L. M. Turner, May 28th, 1874, at St. Michael's. Their ground color is a light grayish buff, thickly spotted with reddish sepia and darker sepia, chiefly on the larger end. Their measurements are as follows: 1.20x.80, 1.25x.85, 1.25x.90, 1.25x.85.

GENUS **CALIDRIS** CUVIER.

“General characters of *Tringa* and *Actodromas*, but hind toe entirely absent. Bill straight, rather longer than the head, slightly expanded or spoon shaped at end. Toes short, the middle one scarcely two-thirds the tarsus.

“The only known species of this genus is nearly cosmopolitan in its range.”

Calidris arenaria (LINN.).

SANDERLING.

PLATE XI.

Reported by Prof. F. H. Snow, in his catalogue of the birds of Kansas: “Migratory; rare. Taken at Lawrence, by W. E. Stevens, October 7th, 1874.”

B. 534. R. 542. C. 627. G. 251. 84. U. 248.

HABITAT. Nearly cosmopolitan, but breeding only in northern portions of the northern hemisphere.

SP. CHAR. "No hind toe; front toes moderate or rather long, flattened underneath, distinctly margined with a membrane. Bill straight, rather thick; ridge of upper mandible flattened; nasal groove deep and nearly as long as the upper mandible, not so distinct as the lower; both mandibles widened and flattened at the tip; aperture of the nostrils large and covered with a membrane. Wing long; tail short, with the middle feathers longest; under coverts long as the tail; legs moderate; lower third of the tibia naked. Lower parts white, immaculate on the belly, sides, flanks, axillars, anal region and crissum; greater wing coverts broadly tipped with white, and inner primaries white at base of outer webs. *Adult, in summer:* Above, light rufous, broken by large spots of black, the feathers mostly tipped with whitish. Head, neck, throat and jugulum pale cinnamon rufous, speckled below and streaked above with blackish. *Adult, in winter:* Above, very pale pearl gray (the lesser wing coverts darker anteriorly), relieved only by faint darker shaft streaks of the feathers. Throat and jugulum immaculate pure white. *Adult, in spring:* Above, light grayish, with large black spots (streaks on the crown), here and there mixed with rufous; jugulum speckled with dusky on a white ground. *Young:* Above, pale gray, spotted with black and whitish, the latter on tips of the feathers; jugulum immaculate white, faintly tinged with dull buff. Bill and feet black; iris brown."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.75	15.25	4.80	2.20	1.00	1.00
Female . . .	8.00	15.75	5.00	2.10	1.00	1.00

The natural home of this wide spread and abundant species is upon the sandy beach along the sea shores. During migration a few pass inland, but do not tarry long, except at the lakes or large bodies of water, where the wash of the waves lines the shores with debris that teems with minute insect life, snails, larvæ, etc; while feeding run swiftly about, with head lowered and well drawn back, often closely following the waves as they roll in and out. At such times they scatter more or less, but are very social, and quickly bunch together to rest or in flight, which is swift and graceful, usually low and near the surface of the water. In resting, often squat upon the ground; as a rule are not shy, and will permit a near approach.

They have been found breeding from the Arctic coast to Greenland. Their nest is a mere depression in the ground, sparingly lined with old grasses and leaves. Eggs usually four. 1.43x.92; brownish olive with faint blotches and spots of varying shades of brown, thickest and somewhat running together about the larger end; in shape, pyriform.

GENUS **LIMOSA** BRISSON.

"Bill lengthened, exceeding the tarsus, slender, and curving gently upwards, grooved to near the tip, the tip not attenuated; tarsus with transverse scutellæ before and behind, reticulated laterally; a short basal membrane between the middle and outer toes; tail short, even; bill much longer than head, nearly equaling tarsi and toes together, curving gently upwards from the base, where it is elevated and compressed, depressed, however, at the end. The grooves on sides of bill and beneath extend nearly to the tip; the tip or upper mandible is thickened and extends a little beyond the lower; the gap is slight, not extending beyond the base of the culmen; the feathers on the sides of the bill reach forward to about the same point, those on the chin a little farther; tarsus more than one and one-half times the toes, twice the bare part of the tibia; hind toe rather lengthened; outer toe webbed as far as end of first joint, inner toe with only a short basal web; tail short, even, two-fifths the wings.

"In some respects, the bill of this genus resembles that of *Macrorhamphus*, the chief apparent difference being the upward curve of the one and its straightness in the other."

Limosa fedoa (LINN.).

MARBLE GODWIT.

PLATE XI.

Migratory; common. Arrive early in April, a few remaining until the last of May; return early in August, and occasionally linger until late in the fall.

B. 547. R. 543. C. 628. G. 252. 85. U. 249.

HABITAT. North America in general, breeding from Iowa, Dakota, etc., to Alaska; south in winter to Guatemala and Cuba.

SP. CHAR. "Bill long, curved upwards; both mandibles grooved; wings long; tail short; legs long; tibia with its lower half naked; toes rather short, margined, and flattened underneath; the outer and middle toes united by a rather large membrane. Entire upper parts variegated with brownish black and pale reddish, the former disposed in irregular and confluent bands, and the latter in spots and imperfect bands; in many specimens the black color predominating on the back, and the pale red on the rump and upper tail coverts. Under parts pale rufous, with transverse lines of brownish black on the breast and sides; under wing coverts and axillaries darker rufous; outer webs of primaries dark brown, inner webs light rufous; secondaries light rufous; tail light rufous, with transverse bars of brownish black. Bill dull flesh color in its basal half, the rest blackish brown; iris brown; feet bluish gray."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	17.50	31.50	9.00	3.30	2.90	4.00
Female...	18.50	33.00	9.50	3.55	3.00	4.50

This species associates in flocks, and inhabits the salt and fresh water shores, marshes and moist grounds upon the prairies.

It feeds upon crustacea, insects, worms, larvæ, etc., moving about in a horizontal position, picking and probing as it goes. Its flight is easy and well sustained, though not very rapid; in alighting, raises the wings over the back as it touches the ground. These birds as a rule are shy, and keep well out of reach, but in case any are wounded, love overcomes fear, and with frantic cries and tremulous wings their friends hover over and about them, offering a tempting shot to the merciless hunter; for their flesh is tender and juicy, and highly esteemed. They act in a similar manner when their nests or young are approached; at such times they often drop to the ground, feign lameness, and in various ways try to divert your attention and lead you away.

Their nests are usually placed on grassy grounds; a slight depression in the soil, worked out to fit the body, and sparingly lined with the old grasses. Eggs usually four, olive drab, rather sparingly spotted and blotched with varying shades of umber brown and pale purplish shell stains, the markings occasionally blending together, and thickest about the larger end; in form, ovate. A set of four eggs, taken April 29th, 1878, from a nest on a marsh, at Oakland Valley, Iowa, measure: 2.10x1.57, 2.20x1.55, 2.26x1.57, 2.27x1.58.

***Limosa hæmastica* (LINN.).**

HUDSONIAN GODWIT.

PLATE XI.

Migratory; rare. Arrive about the first of April to middle of May; return in August and September.

B. 548. R. 545. C. 629. G. 253, 86. U. 251.

HABITAT. Nearly the whole of America; only known to breed in the Arctic regions.

SP. CHAR. "*Summer adult*: Above, blackish brown, irregularly spotted and barred with pale ochraceous, the rump plain brownish black; upper tail coverts immaculate white; wing coverts and shorter quills plain dark brownish gray; primaries brownish black, their shafts white. Lower parts chestnut rufous, narrowly barred with brownish black, the feathers of the belly, etc., often tipped with white. Tail black, with the base and tip (narrowly) white. Lining of wings and axillars plain smoky black. *Winter plumage*: Above, plain dull brownish gray; beneath white, the breast shaded with brownish gray. Other characters as in summer dress. *Young*: Somewhat like the winter plumage, but each feather of dorsal region marked with a subterminal dusky crescent and a

narrower terminal one of dull ochraceous; beneath, very pale drab or dull light buff, the abdomen whitish, and the jugulum more grayish. Bill grayish yellow, dark brown along the ridge of the upper mandible, and blackish toward the tips of both; iris brown; feet light grayish blue."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	15.00	26.50	8.40	3.20	2.30	3.00
Female	15.50	27.00	8.55	3.40	2.30	3.30

Iris dark brown; bill black, with under mandible pale reddish brown at base; legs, feet and claws slaty black.

This species has a remarkable range, extending from Greenland through both continents and to the Falkland Islands. It has not been observed on the west side of the Rocky Mountains south of northern Alaska, but is a regular migrant east of the mountains to the Atlantic. It does not appear to differ in its habits from the Marble. The following, from "North American Water Birds," Vol. I, p. 263, is the only description that I can find of their nests and eggs:

"Mr. MacFarlane found this species breeding in the vicinity of Fort Anderson, on the 9th of June. The nest was on the ground; was composed of a few decayed leaves lying in a small hole scooped in the earth, and contained four eggs. Other nests were found and birds obtained on the lower Anderson River. They were mere depressions in the ground, lined with withered leaves.

"Three of the eggs, collected by Mr. MacFarlane, are in the Smithsonian collection. In two of these the ground is of a deep raw umber color, or an olivaceous drab. There are no well-defined spots, but the apex of the larger end is deeply stained with a dark burnt umber color. A few very distinct spots of a paler shade of this tint are visible over the general surface of the eggs. The other egg has a ground color of a paler umber drab, and the markings are quite distinct. These are small irregular blotches, longitudinal in their direction, and of a deep burnt umber tint. The apex of the larger end is covered with a broad patch, in which all the markings, of a very dark umber, almost black, run into each other. These eggs are pyriform in shape, and measure: 2.15 x 1.41, 2.12 x 1.39 and 2.22 x 1.40."

GENUS **TOTANUS** BECHSTEIN.

"Bill usually slender, and slightly upturned terminally, the lateral groove of the maxilla extending about half way to the tip. No web between the middle and inner toes. Tarsus about twice as long as the middle toe."

SUBGENUS **GLOTTIS** KOCH.

"Bill a little longer than middle toe with claw. Tarsus over one and one-half times as long as the middle toe without claw."

Totanus melanoleucus (Gmel.).

GREATER YELLOW-LEGS.

PLATE XI.

Migratory; common. Arrive the last of March to first of April; return early in August, a few remaining until late in the fall.

B. 539. R. 548. C. 633. G. 254. 87. U. 254.

HABITAT. Nearly the whole of America; breeding only in the more northern portions of North America, occasionally as far south as Illinois and Iowa; wintering from California and the Gulf States southward.

SP. CHAR. *Adult, summer plumage:* Above, variegated with slate black, pale gray and white, the former predominating, the latter in the form of spots along the edge of the feathers, including the wing coverts and tertials; crown and nape grayish white, widely streaked with dusky; upper tail coverts white, irregularly barred with the same; primaries plain blackish slate; tail white, all the feathers barred with dusky, the middle feathers grayish, barred with dusky, the latter sometimes obsolete. Head, neck and lower parts white, only the abdomen and throat immaculate; lores, cheeks, malar region, auriculars and neck (all round) streaked with dusky; breast, sides and flanks barred or transversely spotted with dusky, the bars more sagittate on the crissum. *Winter plumage:* Above, rather light ash gray, without the black, but with the white spotting of the summer dress; foreneck and jugulum more narrowly streaked; breast nearly or quite immaculate; and sides and flanks faintly and irregularly marked with grayish. *Young, first plumage:* Similar to the winter dress, but darker and more brownish above, the white spotting tinged with light brownish buff; lower parts similar; iris brown; legs and feet deep yellow (tinged with olive in young)."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	14.75	25.25	7.75	3.30	2.60	2.30
Female . . .	14.25	25.00	7.70	3.25	2.60	2.30

Bill dark brown, with edge of base greenish yellow; claws dark brown.

This common and well-known species frequent the marshes, muddy flats and shores, where they wade about in the mud and

shallow waters in search of minnows, minute snails, worms, insect life, etc. They move about with a quick, easy step, but the jerky, balancing motion of the body gives them an unsteady and not a graceful carriage. They are usually met with in small flocks or pairs, where they make their presence known by their loud whistling "Cho-whee-cho-che-cho," and as the birds are very wary and the first to give the alarm, they are much disliked by the hunters, for their vociferous tell-tale note puts all other birds in the vicinity upon the lookout.

These birds have been found breeding in various localities, but I can find no well-authenticated description of its nest and eggs. The following seems to be the most reliable, viz.: Mr. Nelson (in "Bulletin of the Essex Institute," Vol. 8, p. 128), says:

"In June, 1875, I found several pairs of these birds about the Calumet marshes, where, from their actions, I was certain they were breeding, but was not fortunate enough to find their nests. The 10th of June, 1876, Mr. Rice observed a pair about a prairie slough near Evanston. A few days later a set of four eggs were brought him from a similar situation a few miles northwest of that place, and from the description of the parent bird—driven from the nest—he decided they must belong to this species. I perfectly agree with Mr. Rice's decision, for the prominent characteristics noticed by the collector are obviously applicable to this bird.

"The nest was situated in a slight depression, at the base of a small hillock, near the border of a prairie slough, and was composed of grass stems and blades. The eggs measure, respectively: 1.70x1.20, 1.72x1.31, 1.74x1.31, 1.80x1.38 inches. The ground color is a deep grayish white, marked on three eggs with spots of dark brown, and on the other egg with spots and well defined blotches of a considerably lighter shade of the same. In addition there are shell markings and obscure spots of lilac. The markings are disposed quite abundantly over the surface of the egg, but are more numerous about the large end."

Capt. Chas. Bendire writes me that the only eggs of this species in the United States National Museum, believed to be gen-

uine, are three poor specimens from Manitoba, collected by Mr. E. Dickinson; dimensions: 1.75x1.19, 1.85x1.22, 1.68x1.18; ground color brownish buff, distinctly but very irregularly spotted with rich vandyke or madder brown; in form, elongate ovate.

Totanus flavipes (Gmel.).

YELLOW-LEGS.

PLATE XI.

Migratory; abundant. Arrive in March, a few remaining until the last of May; return in August, and tarry until early frosts.

B. 540. R. 549. C. 634. G. 255, 88. U. 255.

HABITAT. The whole of North America; breeding from northern Illinois (seldom in the United States), north to within the Arctic circle; south in winter into southern South America; accidental in Europe.

SP. CHAR. "Very similar to *T. melanoleucus*, but smaller and more slender. Bill rather longer than the head, straight, slender, rather compressed; wing long, pointed; tail short; legs long, lower half of the tibia naked; toes moderate, slender, margined, the outer and middle united at base. *Adult, summer plumage:* Above, ashy, mixed with ragged blotches of black, this having a tendency to form regular transverse bars on the secondaries and scapulars. Crown and nape with longitudinal streaks of black on a grayish-white ground; upper tail coverts pure white, with transverse bars of dusky; tail white, the middle feathers ashy, and all with transverse, rather narrow, bars of ash. Primaries and their coverts plain dusky black. Lower parts white, the jugulum and breast densely streaked with blackish, and the sides marked with more transverse markings of the same color. *Winter plumage:* Above, ashy, sometimes nearly unbroken, but generally slightly variegated (especially on the scapulars and wing coverts) with transverse spots of dusky, and whitish edgings and dots along the margin of the feathers. Streaks almost absent from the head, neck and jugulum, which are nearly uniform light ashy; the chin, throat and supraloral stripe white. In other respects like the summer plumage. *Young:* Like the winter adult, but the light markings above more or less tinged with pale brown or dull ochraceous.

"This species is exceedingly similar to *T. melanoleucus* in plumage, but differs in the following particulars: In the summer adult the upper parts are more transversely spotted with a less amount of black, while the lower parts are without well-defined transverse spots or bars of black; in the winter plumage the head, neck and jugulum are nearly uniform ashy, instead of distinctly streaked."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.50	19.50	6.00	2.55	2.00	1.45
Female . . .	11.00	20.00	6.25	2.65	2.00	1.50

Iris brown; bill black, with edge of base greenish yellow; legs and feet bright yellow; claws dark brown.

These birds are very common in the United States during migration, east of the Rocky Mountains, especially during the spring in the western portion; and, although considered rare on the Pacific side, I am inclined to think that in suitable localities it will prove to be a regular and not uncommon migrant. I met with it at Whatcom, Washington (also at San Jose, Guatemala), Capt. Chas. Bendire reports it an abundant migrant in Oregon, and it has been found breeding in Alaska.

In habits, this noisy bird does not appear to differ from the preceding species, though less watchful and more easily approached.

Their nests are mere depressions in the ground, occasionally lined with a few leaves or grasses. Eggs usually four, 1.69 x 1.15; cream to drab buff, spotted and blotched irregularly with varying shades of dark brown and purple shell stains; in shape, pyriform.

SUBGENUS HELODROMAS KAUP.

"Similar to *Totanus*, but smaller, and with middle toe nearly as long as tarsus."

***Totanus solitarius* (WILS.).**

SOLITARY SANDPIPER.

PLATE XI.

Migratory; common. Arrive the first of March to middle of April; a few remain during the season. Probably breed in the State.

B. 541. R. 550. C. 637. G. 256, 89. U. 256.

HABITAT. The whole of temperate North America; breeding chiefly in the northern portion; winters in California, the Gulf States and southward to Brazil and Peru.

SP. CHAR. "*Adult, in summer:* Above, olivaceous slate, rather sparsely speckled with white, the crown and nape indistinctly streaked with the same; outer upper tail coverts barred with white; primaries and primary coverts plain slate black. Tail white (the middle feathers dusky), all the feathers widely barred with dusky, these bars most numerous on outer webs, where extending to the base of the feathers. Eyelids, supraloral stripe and lower parts white; the sides of the head, neck (all round) and jugulum streaked with brownish slate; remaining lower parts immaculate. Lining of wings and axillars slate color, regularly barred with white. *Winter plumage:* Similar to the summer dress, but dark ashy above, less distinctly speckled, and foreneck very indistinctly streaked, or simply washed, with ashy. *Young:* Above, grayish brown (lighter and more olivaceous than the adult), thickly speckled with buff; crown and nape plain

brownish gray; checks and sides of neck nearly uniform gray; foreneck streaked as in the adult.

"Bill greenish brown (in life), dusky terminally; iris brown; legs and feet olive green in adult, more grayish in young."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.50	16.00	5.20	2.25	1.35	1.25
Female . . .	8.75	16.75	5.50	2.30	1.45	1.30

I have met with this species in suitable localities throughout the United States, Mexico and Central America, but nowhere in abundance.

These birds inhabit the margins of sluggish streams and shallow ponds, preferring the wooded lands or shores skirted with trees, where they wade about in the mud and water, chasing with open wings, or probing for, and feeding upon the minute mollusks, worms and various forms of aquatic insect life that abound in such places. They have a peculiar way of balancing the body, by bending the knees, jerking the tail and bowing the head, much like the Spotted Sandpiper, but in a slower and more dignified manner, as if proud of their motions; and, notwithstanding they are tattlers by name, differ from the family by being usually silent, seldom uttering their low, whistling notes except when startled or about to take wing. As the tendency of nature is to harmonize, is it not probable that their nature has been changed by the stillness and solitude that surrounds them in their secluded retreats? As a rule the birds are not shy, and, when followed, run in an unconcerned manner along the shore, or by short flights keep a little ahead, or return to the starting point by circling back close to and over the water. During the breeding season they are very secretive, and although young birds have often been met with, their nests and eggs have seldom been discovered, and in most cases their identification is doubtful.

Their nest is a slight depression in the soil, lined with a few leaves or grasses. Eggs said to be from two to four, 1.25x.88, to 1.37x.95; ground color light drab, finely and rather evenly spotted with dark brown, and a few faint purple shell stains; in shape, pyriform.

GENUS **SYMPHEMIA** RAFINESQUE.

"Bill compressed, very thick, the culmen rounded. The lower mandible scarcely grooved, the upper grooved to about the middle: Culmen slightly convex; gonys ascending. Bill cleft but little beyond base of culmen. Feathers of sides of both mandibles falling short of the nostrils, the lower rather farther forward. Chin feathers reaching to middle of nostrils. Bill longer than head: about equal to tarsus, which is more than one and one-half times the middle toe; both toes webbed; the emargination of inner web as far forward as the middle of basal joint of middle toe, the outer reaching nearly to the end. Bare portion of tibia rather less than middle toe without claw. Tail nearly even, or little rounded, not half the wings."

Symphemia semipalmata inornata BREWST.

WESTERN WILLET.

PLATE XI.

Not uncommon. Arrive about the first of May; a few remain during the summer months, in the western part of State, and without doubt occasionally breed there.

B. —. R. —. C. —. G. —, —. U. 258a.

HABITAT. Western North America, east to the Mississippi valley, Gulf States, and sparingly along the coast of the southern Atlantic States; south in winter to Mexico; north to about latitude 56°, breeding from the Gulf coast northward, chiefly within the United States.

This subspecies — recently added to the A. O. U. list — proves to be our Kansas bird, and not *S. semipalmata*, as heretofore given. The following descriptions point out the difference existing, and upon which Mr. Brewster based the separation, viz.:

SP. CHAR. Largest of American *Scolopacidae*, except genera *Numenius* and *Limosa*. Primaries black, with nearly the basal half white, producing a very conspicuous patch on the spread wing. *Summer adult*: Above, light brownish gray, streaked on the head and neck, and spotted and barred on the back, etc., with blackish; beneath, white, tinged with ashy on foreneck and with buff along sides, the former, with jugulum, spotted with dusky, and the latter barred with the same; upper tail coverts white; tail ashy, more or less distinctly mottled transversely with a deeper shade of the same; wing coverts plain ash gray; axillars and lining of wing plain sooty black. *Winter plumage*: Above, plain ash gray; beneath, immaculate dull white, the foreneck shaded with grayish. *Young*: Above, brownish gray, the feathers margined with pale ochraceous; sides much tinged with the same, and finely mottled transversely with grayish. Bill black; legs and feet grayish. In life, bill light blue, dusky toward end; iris brown; feet light blue, claws black.

SUBSP. CHAR. *Male and female, breeding plumage*: Differing from *S. semipalmata* in being larger, with a longer, slenderer bill; the dark markings above

fewer, finer and fainter, on a much paler (grayish drab) ground; those beneath duller, more confused or broken, and bordered by pinkish salmon, which often spreads over or suffuses the entire under parts, excepting the abdomen; middle tail feathers either quite immaculate or very faintly barred. (*Brewster*.)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	15.00	28.50	8.25	3.45	2.50	2.50
Female . . .	14.50	28.00	8.15	3.25	2.50	2.00

The birds inhabit the salt and fresh water shores and marshy lands, where they move with an easy, graceful carriage; in flight they are swift and strong. Their food consists of various small forms of life that such places afford; and, in searching for the same, I have seen them turn over shells and push aside pebbles.

I have met with this noisy, restless bird on the Pacific coast, at Altata, Mexico, San Diego, California, and Whatcom, Washington. At the latter place I only noticed a pair, but found them breeding in abundance on the Gulf coast of Texas; also a few at Lake Como, Wyoming. At such times they manifest great love and anxiety for their eggs and young, flying with tremulous wings close about an intruder, continually uttering their loud, sharp "Pill-will-willet," often dropping to the ground or alighting in trees, scolding vehemently all the time—no let up. On one occasion I had to kill two pairs that were nesting near a blind at the edge of the water where I was secreted, as their notes of alarm kept the rare birds I desired away.

Their nests are placed in tussocks of grass, usually near the water's edge; they are quite bulky, and made of grasses and other growths at hand. Eggs four; the ground color varying from buff to olive and grayish white, spotted and blotched—thickest about the larger end, with various shades of brown, and shell stains of purple gray; in shape, pyriform. A set of four eggs, taken April 30th, 1882, near Corpus Christi, Texas, from a nest in tall grass, measure: 2.02x1.52, 2.05x1.47, 2.13x1.56, 2.17x1.58.

GENUS **BARTRAMIA** LESSON.

"Upper mandible grooved laterally to within the terminal fourth, the lower not quite so far. Culmen concave to near the tip, where it is slightly decurved; gonys straight. Mouth deeply cleft, almost as far back as the anterior canthus. The culmen only about two-thirds the commissure, shorter than the head or tarsus, and about equal to middle toe with claw. Feathers extending much

farther forward on the upper jaw than on the lower, although those of chin reach nearly to the end of nostrils. Tarsus one and one-half times middle toe and claw; the bare part of the tibia not quite equal to the middle toe above; outer toe united at base as far as first joint; web of inner toe very basal. Tail long, graduated, more than half the wings."

***Bartramia longicauda* (BECHST.).**

BARTRAMIAN SANDPIPER.

PLATE XI.

Summer resident; abundant. Arrive the last of March to middle of April; begin laying early in May; a few remain until the last of September.

B. 545. R. 555. C. 640. G. 258, 91. U. 261.

HABITAT. Eastern and central North America, west to Utah and Oregon, north to northern Alaska and northern provinces of Quebec; south in winter to Brazil and Peru; breeds from Pennsylvania, southern Kansas and Utah northward throughout its range; occasionally wanders to Europe; accidental in Australia.

SP. CHAR. "Bill about as long as the head, rather wide and flattened at base, slightly curved at the tip; nostrils with a large membrane; nasal groove long; wing long; tail long for this group; legs moderate or rather long; lower half of the tibia naked; toes moderate, the outer and middle united by a membrane, inner and middle free to the base; hind toe small. *Adult:* Above, grayish brown, the feathers paler and more ochraceous toward their edges, spotted and barred with black; head and neck (except throat) streaked with blackish; crown blackish, divided with a mesial line of buff; throat, belly and crissum plain buffy white; axillars pure white and clear dusky slate, in regular bars of nearly equal width; tail feathers (except middle pair) creamy buff, broadly tipped with white, crossed by a broad subterminal black spot, and with a few irregular narrow bars anterior to this; outer webs of primaries plain dusky slate, the inner webs with wide transverse bars of white on the outer quill, on the others broken into a confused mottling. Rump and upper tail coverts nearly uniform blackish, the outer feathers of the latter with their exterior webs partly white. *Young:* Similar to the adult, but the buff on the head, jugulum, wings, etc., much deeper, the streaks on the foreneck and jugulum much less distinct, and the back plain black, the feathers bordered with buff. Bill yellowish green, the tip dusky, the edges toward the base yellow; iris dark hazel; legs and tarsi light yellowish gray, toes rather darker, claws brownish black. *Downy young:* Above, coarsely and irregularly mottled with black on a grayish white ground, tinged with light rusty; lower parts buffy white, with about three blackish spots on the flanks, one beneath the eye, a smaller one on the lores, about half way between the bill and the eye, and a large, nearly vertical, one behind the ears."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	11.75	21.50	6.55	3.50	1.90	1.15
Female . . .	11.50	21.00	6.50	3.40	1.85	1.10

This species, so well adapted in structure for a wader, prefers the upland prairies and fields for its home, seldom frequenting the water's edge. Its diet is chiefly grasshoppers, beetles and crickets, with occasionally small berries and the tender buds of plants. When fat the flesh is juicy and delicious, and they are therefore much sought after by the pot hunters for the market. These birds should be strictly protected, for they are beneficial and in no way harmful. Their graceful carriage, hovering flight and peculiar prolonged, loud and plaintive whistle attracts attention and makes the well-known and familiar bird a favorite. When hunted much they soon become wild, and when approached run through the grass, with lowering head, in a skulking, dodging manner, and where the grass is short, or the field bare, often drop close to the ground, but take wing the moment they think they are observed, flying swift and high, with an easy stroke of the wings, except during the early breeding season, when they circle and hover about with tremulous wings, scolding incessantly. Before alighting the birds usually sail for quite a distance, and the moment they touch the ground raise their wings high and then slowly fold them back; and though not perchers proper, often alight upon a fence or post.

Their nests are placed on the prairies, in a depression at the foot of a bunch of grass, and often in open, exposed situations; in some cases the bottom of the nest is lined sparingly and loosely with grasses. Eggs four, 1.75x1.27; grayish white to pale buff, spotted with varying shades of light to dark brown, thickest about larger end; in shape, pyriform.

GENUS **TRYNGITES** CABANIS.

"Upper mandible grooved to about the terminal fourth; the lower not quite so far. Culmen and gonys about straight. Mouth deeply cleft more than half way to the eye; the culmen about two-thirds the commissure. Culmen much shorter than the head, and about equal to middle toe without claw. Tarsus about one and one-sixth as long as middle toe and claw. Bare part of tibia decidedly shorter than middle toe without claw. Toes cleft to the base, with only a very rudimentary web. Upper jaw feathered to the nostrils; the side of the

lower and beneath feathered much farther, or to the end of the nostrils; the interspace of the rami entirely filled. Tail somewhat graduated, not half the wing."

Tryngites subruficollis (VIEILL.).

BUFF-BREADED SANDPIPER.

PLATE XII.

Migratory; rare. Arrive about the first of May; return early in August.

B. 546. R. 556. C. 641. G. 259. 92. U. 262.

HABITAT. North America in general, especially the interior; breeding in the Arctic regions; south in winter to southern South America; occasionally in Europe.

SP. CHAR. "Bill shorter than head, straight, compressed, narrow at the point; nasal groove long; wings very long, the first quill longest; tertiaries rather shorter; tail moderate or longer than usual in this group; legs rather long, lower third of the tibia naked; toes free at base, flattened underneath, and slightly margined; hind toe small. Upper parts pale and dull ochraceous, with an ashy tinge; every feather with a large central, lanceolate, crescent-shaped, or oblong spot of black, frequently with a glossy green tinge, especially on the back and shorter tertials. Under parts light ochraceous or pale fawn color, many feathers tipped with white, and paler on the flanks and abdomen, on the breast with partially concealed small spots of black; axillary feathers white. Quills with their outer webs light brown, inner webs ashy white, marbled with black, and narrowly tipped with white; middle tail feathers brownish black; outer feathers lighter, with transverse waved lines of black on the terminal half, and tipped with white; under primary coverts beautifully marbled with black. Bill greenish black; legs greenish yellow. *Young:* Generally similar, but the upper parts with the black and fawn color less sharply contrasted, and each feather with a conspicuous terminal border of white. Marbling on inner webs of primaries and on under primary coverts much more minute and delicate than in the adult. Bill dull olive green, dusky toward the point; iris hazel; feet dull yellowish green; claws dusky."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.50	17.00	5.25	2.50	1.25	.75
Female	8.00	16.00	5.00	2.30	1.20	.70

This widely-distributed species does not seem to be common anywhere, except upon its breeding grounds. It is usually, like the Bartramian, found upon the uplands, and is very similar in its habits. Mr. Murdock gives the following interesting description of its breeding habits at Point Barrow, Alaska:

"This is an abundant summer resident, and was more plenty in the season of 1883 than it was the year before.

"They arrived both seasons in a body at about the same date



PLATE XII.

1. BUFF-BREASTED SANDPIPER, Male. 2. SPOTTED SANDPIPER, Male. 3. LONG-BILLED CURLEW, Male. 4. HUDSONIAN CURLEW, Female. 5. Female
 6. AMERICAN GOLDEN PLOVER, Male. 7. Female. 8. BLACK-BELLIED PLOVER, Male. 9. Female. 10. AMERICAN GOLDEN PLOVER, Male. 11. Female. 12. KILLDEER;
 Male. 13. SEMI-PALMATED PLOVER, Male. 14. Female. 15. SNOWY PLOVER, Male. 16. Female. 17. MOUNTAIN PLOVER, Female.

(June 6th to 8th), and were first seen on the dry banks below the village, feeding greedily on the flies and beetles which were out sunning themselves.

“By the middle of June they had spread pretty well over the dryer parts of the tundra, both above and below the station. They were never seen on the lower, marshy portions of the tundra, but always confined themselves to the high and dry banks, or what we call the black tundra.

“The eggs, as might be inferred from their colors, are laid in the latter locality, as a rule, where they harmonize well with the black and white of the ground and moss. We were unable to find the nest in 1882, but the next spring we collected the eggs in considerable abundance. Like the rest of the waders they build no nest, but deposit the four eggs, small end down, in a shallow depression in the ground, lined with a little moss. Four is the usual number of eggs in a complete set, though we collected one set of five.

“During the greater part of the breeding season, that is, from the time they arrive till the end of June, the males indulge in curious antics, which we had frequent opportunity of observing.

“A favorite trick is to walk along with one wing stretched to its fullest extent and held high in air. I have frequently seen solitary birds doing this apparently for their own amusement, when they had no spectators of their own kind. Two will occasionally meet and ‘spar’ like fighting cocks for a few minutes and then rise together like ‘towering’ birds, with legs hanging loose, for about thirty feet, then drifting off to leeward. A single bird will sometimes stretch himself up to his full height, spread his wings forward, and puff out his throat, making a sort of clucking noise, while one or two others stand by and apparently admire him. They are very silent, even during the breeding season. When they first arrive they are to be found associating with *Actodromas maculata* for a few days. After the breeding season they disappear gradually, never gathering into flocks, but quietly slipping away, and none are to be seen after the first week in August.”

For a full description of their nests and eggs, I quote from "North American Water Birds," Vol. I, p. 308:

"It breeds abundantly in the Anderson River region, where a number of its nests and eggs were found by Mr. MacFarlane; and from his memoranda in reference to the nests and eggs of this species, in upward of twenty instances, we gather that the nest is always on the ground, and hardly distinguishable from that of the Golden Plover, being a mere depression in the soil, scantily lined with a few withered leaves and dried grasses. These nests were all obtained on the Barren Grounds, between Horton's River and the coast, between the 26th of June and the 9th of July. The eggs were in every instance four in number. Even in July the embryos were not far advanced. When the nest was approached, the female usually made a short, low flight, to a distance of about twelve yards.

"The eggs of this species are conspicuously pyriform in shape, and measure 1.51 inches in length by 1.10 in the greatest breadth. So far as I have noticed them, however much they may vary in certain minor respects, they all present a remarkable uniformity in their general characteristics and appearance. Their ground color is uniformly an ashy drab, over which are profusely spread rounded markings, splashes and confluent blotches of deep sepia. The markings are smaller and more rounded in shape around the smaller end, and larger and more confluent about the other. The sepia tint is quite uniform, and the deeper markings are mingled with washes of dilute purplish slate. These markings vary in their shape, size and character, being in some large splashes, and in others longitudinal, as if made by strokes of a paint brush."

GENUS **ACTITIS** ILLIGER.

"Upper mandible grooved to the terminal fourth; the bill tapering and rather acute. Cleft of mouth only moderate; the culmen about five-sixths the commissure. Feathers extending rather farther on side of lower jaw than upper the former reaching as far as the beginning of the nostrils; those of the chin to about their middle. Bill shorter than the head, straight, equal to the tarsus, which is of the length of middle toe and claw. Bare part of tibia half the tarsus, outer toe webbed to first joint; inner cleft nearly or quite to the base. Tail much rounded, more than half the wing."

Actitis macularia (LINN.).

SPOTTED SANDPIPER.

PLATE XII.

Summer resident; common; in migration, abundant. Arrive the middle of April to first of May; begin laying about the middle of May; a few remain into November.

B. 543. R. 557. C. 638. G. 260, 93. U. 263.

HABITAT. North America in general; breeding throughout the temperate regions and north to the Arctic coast; south in winter to Brazil and lower Uruguay, South America; occasionally in Europe.

SP. CHAR. "Small; bill rather longer than the head, straight, slender; long groove in both mandibles; wing rather long, pointed; tail medium, rounded; legs rather long, lower third of the tibia naked; toes long, margined, and flattened underneath, outer connected with the middle toe by a large membrane, inner very slightly connected to the middle toe. *Adult*: Upper parts greenish ashy, with a somewhat metallic or bronzed luster, and with numerous sagittate, lanceolate and irregular (mostly transverse) spots of brownish black, having the same luster. Line over the eye and entire under parts white, with numerous circular and oval spots of brownish black over the whole lower surface, smaller on the throat, largest on the abdomen. Primaries plain dusky; tail dark ashy, the outer feathers with dusky and white transverse spots on their terminal portion; axillars immaculate white. *Young*: Above, greenish ashy, the wings with narrow transverse bars of black and ochraceous, most numerous on the coverts. Beneath, white, without any spots and with an ashy suffusion across the jugulum. *Downy chick*: Above yellowish gray, with a narrow black dorsal stripe from the bill to the tail; a narrow black line through the eye. Beneath, dull white.

"Mandible and edge of the maxilla pale wax yellow (in life); rest of bill black; iris dark brown; tarsi and toes pale grayish olive."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.60	13.40	4.15	2.10	.95	.90
Female . . .	8.00	13.75	4.25	2.20	.95	.95

This well-known species is quite common throughout its range, and is at home everywhere along the salt and fresh water shores, and not like most of the family restricted to a northern clime for its breeding grounds. Its quick, peculiar, balancing motions, caused by bending the knees and keeping time with the head and tail, readily attract attention and has given the soubriquet of "Teeters" or "Tipups," which can never be rubbed out. Its flight is also peculiar, usually in a low, coursing manner along the shore, with alternate motions of the wings; at first regular strokes, then with its long, pointed wings

curving downward and tremulously vibrating, it sails along, uttering its usual "Peet-weet," as it goes.

Their food consists of insects and small forms of life, found at or near the water's edge.

The parents both assist in hatching and rearing of the young, which leave the nest and follow, soon after they are hatched. They run swiftly, and it is surprising how quick they will disappear at the first note of warning, by hiding or squatting close to the ground; and in case of real danger the old birds flutter about in great distress, and in various ways try to divert attention and draw the intruder away.

Their nests are placed on the ground and lined sparingly with grasses and leaves; usually on open, dry lands near water, and in a tuft of grass or under a low bush; (I once found a nest under an old drift log.) Eggs four, 1.30x.93; creamy buff to olive drab, spotted and blotched with dark brown and shell markings of lilac; thickest and running somewhat together around large end; in shape, pyriform.

GENUS **NUMENIUS** BRISSON.

"Legs covered anteriorly with transverse scutellæ, laterally and behind with small hexagonal scales. Bill very long, exceeding the tibia, and curved downward from the terminal half; the culmen rounded. Tip of bill expanded laterally and club shaped. Grooves of bill not reaching beyond the middle. Tertials as long as primaries.

"Bill variable in length, always longer than tarsus, sometimes exceeding tarsus and toes; it is nearly straight at the base, then decurving quite rapidly to the tip, where the upper mandible is thickened downward beyond and over the lower; lateral grooves occupying only the basal half or third of the bill; under mandible not grooved beneath; cleft of mouth extending but little beyond the base of culmen. Feathers of head extending about the same distance on both mandibles; those of chin to opposite the anterior extremity of the nostrils. Tarsi nearly twice as long as middle toe, rather more than twice the bare part of tibia, covered behind by hexagonal scales larger than the lateral ones. Outer toe webbed for its basal joint; inner for half this distance. Tail short, nearly even, not quite half the wings. Tertials as long as the primaries."

Numenius longirostris WILS.

LONG-BILLED CURLEW.

PLATE XII.

Summer resident; rare; in migration, common. Arrive about April 1st; begin laying early in May; a few remain into October.

B. 549. R. 558. C. 643. G. 261, 94. U. 264.

HABITAT. The whole of temperate North America; breeding from the Gulf coast and Arizona north within its range; south in winter to the West Indies and Guatemala.

SP. CHAR. "The largest American species of this genus. Bill very long, much curved, upper mandible longer than the under, somewhat knobbed at the tip; wing rather long; legs moderate; toes united at base. Entire upper parts pale rufous, tinged with ashy, every feather with transverse and confluent bands of brownish black, most numerous and predominating on the back and scapulars; secondary quills, under wing coverts and axillars bright rufous; primaries with their outer webs brownish black and their inner webs rufous, with transverse bands of black. Under parts pale rufous, with longitudinal lines of black on the neck and sides; tail rufous, tinged with ashy, transversely barred with brownish black. Specimens vary to some extent in the shade of the rufous color of the plumage, and very much in the length of the bill. The rufous color is probably more distinct in the young. *Downy young:* Very pale ochraceous, with a tinge of sulphur yellow, rather deeper below than above. Upper parts marbled coarsely and rather irregularly with black. Bill straight, about 1.40 inches long."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	22.50	37.50	10.25	3.75	3.20	7.00
Female	25.00	40.00	11.25	4.00	3.40	7.75

This large species is rare upon the Atlantic coast north of the Carolinas, but quite common elsewhere westward to the Pacific. Its most northern record that I can find is Labrador and Vancouver's Island; but it seldom breeds north of Prince Edward's Island, Manitoba and Oregon.

These birds, as a rule, inhabit the muddy shores and moist grassy flats and plains, but often frequent and breed upon the uplands, remote from water. Their food consists of worms, crickets, beetles, grasshoppers, small snails, crabs and crawfish—the latter they reach for with their long bills, and pull them out of their holes; and I have seen them probe for and unearth the larvæ of the beetles and other forms of life that in the spring come to or near the surface, preparatory to transformation. While feeding they move about with an easy carriage.

Their flight is not rapid, but well sustained, with regular strokes of the wings, and when going a distance, usually high and in a triangular form, uttering now and then their loud, prolonged whistling note, so often heard during the breeding season; before alighting, suddenly drop nearly to the ground, then gather, and with a rising sweep gracefully alight. When at rest

usually stand on one leg, or sit upon the ground. They are very attentive to and solicitous for their young, hovering over and vociferously scolding an intruder, and in various ways try to lead him away.

Their nests are placed on the ground in a slight depression, sparingly lined with grasses, usually upon the high prairies, often quite a distance from water. Eggs three or four, 2.85x1.85; creamy white to olive drab, spotted and blotched with lilac and varying shades of brown; in form, rather ovate, to pear shape.

Numenius hudsonicus LATH.

HUDSONIAN CURLEW.

PLATE XII.

Migratory; rare. Arrive the last of April to first of May; return in August. I have not met with them later, and think they only stop to rest on their way south to the seacoast.

B. 550. R. 559. C. 645. G. 262. 95. U. 265.

HABITAT. Nearly the whole of America; breeds from northern Dakota to the Arctic coast, and winters chiefly south of the United States.

SP. CHAR. "*Adult*: Crown dark sooty brown, divided longitudinally by a mesial stripe of buff; a narrow dusky stripe on side of head from bill to anterior angle of the eye, continued back beneath the eye and along upper edge of auriculars, separated from the dusky of the crown by a wide, well-defined superciliary stripe of light buff. Rest of head and neck and entire lower parts light buff, the chin, throat and abdomen immaculate, other portions, including cheeks, entire neck, jugulum and breast, marked with linear streaks of dark brown; axillars pinkish buff or dilute cinnamon, barred with dark brown. Upper parts spotted with dark sooty brown and light buff, the latter prevailing on the wing coverts, the former on the back; rump and upper tail coverts similarly spotted; primaries dusky, the inner quills spotted with buff."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	17.00	33.00	9.50	3.75	2.25	3.50
Female . . .	18.50	35.00	10.00	4.50	2.30	4.00

Iris brown; bill olive black, under mandible pale reddish at base; legs and feet dark greenish lead color; claws black.

This widely distributed species does not appear to be very abundant anywhere. I have occasionally met with small flocks of these birds in nearly every locality where I have collected; and I have in the "Goss Ornithological Collection" a male shot

on Briar Island, Nova Scotia, and a female shot at Neah Bay, Washington.

In habits they are not noticeably different from either of the other two species.

Their nests are placed on the ground, a mere depression lined sparingly with old grasses or leaves. Eggs usually four; cream to olive drab, irregularly spotted and blotched with varying shades of umber to slate brown, thickest about larger end; in shape, ovate, approaching pyriform. A set taken in June, 1885, in northwestern Dakota, measure: 2.28x1.59, 2.30x1.63, 2.31x1.68, 2.31x1.69. Capt. Chas. Bendire gives the following dimensions of eight specimens collected by Mr. MacFarlane, near the Arctic coast, in the vicinity of Anderson River: 2.25x1.57, 2.30x1.60, 2.40x1.60, 2.39x1.59, 2.08x1.54, 2.23x1.55, 2.23x1.65, 2.22x1.67.

Numenius borealis (FORST.).

ESKIMO CURLEW.

PLATE XII.

Migratory; abundant. Arrive the last of March to middle of April; return early in August, but are not nearly so numerous as in the spring, the larger portion returning by the sea shore.

B. 551. R. 560. C. 646. G. 263, 96. U. 266.

HABITAT. Northern and eastern North America, breeding far northward; south in winter to the southern extremity of South America.

SP. CHAR. "*Adult*: Crown dusky, streaked with buff, but without distinct mesial stripe; a dusky stripe of aggregated streaks on side of head, from bill to and behind the eye; rest of head, neck and entire lower parts light buff, the cheeks and neck streaked, the breast, sides, flanks and crissum with V-shaped markings of dusky brown; axillars and lining of wing pale cinnamon, the former narrowly barred with dusky. Upper parts spotted dusky and buff, the wing coverts more grayish brown, with dusky shaft streaks; primaries, including their inner webs, plain brownish dusky. Rump and upper tail coverts spotted dusky and light buff. Tail brownish gray, barred with dusky.

"In plumage this little Curlew closely resembles *N. hudsonicus*, but has the inner webs of the primaries finely and confusedly mottled, instead of being marked with very distinct and regular ochraceous spots; the breast with transverse V-shaped markings, instead of linear, longitudinal streaks, while there are other differences, besides the important one of size, which readily distinguish them."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	13.50	27.50	8.50	3.25	1.75	2.10
Female . . .	13.00	27.00	8.30	3.25	1.65	2.10

Iris dark brown; bill brownish black, base of under mandible to forks pale reddish yellow; legs and feet dark greenish blue; claws black.

The only mention I can find of this species on the Pacific coast south of Alaska is of a single straggler, shot in September, 1883, at San Diego, California, reported in "The Auk," Vol. 1, p. 393; but east of the Rocky Mountains it is by far the most numerous of the family, and during the spring migration very abundant west of the Mississippi, where it assembles in large flocks upon the burnt grounds and bare spots on the prairies, to probe for and feed upon the larvæ and other forms of life that the warmth from the sun brings early to the surface. Upon their breeding grounds, are said to feed largely upon small berries. Their soft, mellow, whistling note is continually heard as they sweep about over their feeding grounds with regular strokes of their wings, flying swift and low, only sailing when about to alight; and the moment their feet touch the ground raise their wings high and slowly fold them back, much like the Bartramian Sandpiper. They move about with an easy step, ever upon the lookout, and off at the first alarm; but, as they are slow to leave their feeding grounds, in circling about often come within easy shot, and when the hunters are distributed the slaughter is often great. The birds are beneficial, and during the spring migration the farmers should see that they are protected.

The following description of their nest and eggs is from the "North American Water Birds:"

"Mr. MacFarlane met with this species breeding in great abundance throughout the Barren Grounds up to the Arctic coast, but it was not met with before entering these grounds. The nests—which were found from about June 20th to July 10th—were in every instance mere holes in the ground, lined with a few decayed leaves and having a thin sprinkling of hay in the center. It was very difficult to detect the nest of this species, as the parent bird glides off long before a near approach,

and the eggs closely resemble the grass in colors. This species was very numerous in the barrens. The female, soon after leaving her nest, usually ascends into the air in a straight line. The young birds leave the nest as soon as hatched, and when approached hide themselves in the grass, and can be found only with great difficulty. Some were already hatched by July 12th.

“The eggs of this species exhibit very great variations in size, colors and distribution of markings. In No. 9431 (S. I.) the ground is a pale greenish ash, with large oblique blotches of different shades of sepia, the lighter inclining to a purplish slaty tint. In No. 14099 (S. I.) the ground is of a deep muddy or clay colored drab. The markings are chiefly toward the larger end, where they are confluent on the apex, are of an umber tint varying in the depth of the shade. In No. 9432 (S. I.) the ground is a deep olivaceous drab, and the markings, of a very dark sepia color, are in the form of irregular small blotches, more numerous toward the larger end. In No. 11401 the ground is a light ash green color, and the markings are smaller, more numerous, more longitudinal, and of a much lighter shade of sepia. These eggs are of an oblong oval shape, slightly pyriform, one end more rounded than the other, and have an average length of about 2.10 inches, and a breadth at the largest portion of 1.90 inches.”

FAMILY **CHARADRIIDÆ**. PLOVERS.

“Small or medium sized shore birds (scarcely waders), with rather short, somewhat Pigeon-like bill, large round head, short neck, long and pointed wings, and moderately lengthened legs, the hind toe usually absent.

“The above superficial characters are sufficient to define the family of Plovers as distinguished from the allied groups.”

GENUS **CHARADRIUS** LINNÆUS.

“Size small or medium; head without crest; plumage much speckled or spotted above and without metallic gloss; lower parts chiefly black in summer.”

SUBGENUS **SQUATAROLA** CUVIER.

“A rudimentary hind toe; legs reticulated with elongated hexagons anteriorly, of which there are five or six in a transverse row; fewer behind; first primary longest; tail slightly rounded.”

Charadrius squatarola (LINN.).**BLACK-BELLIED PLOVER.**

PLATE XII.

Migratory; rare. Arrive early in April to late in May. I have no record of their return; think they go south chiefly by the sea shores.

B. 510. R. 518. C. 580. G. 235, 97. U. 270.

HABITAT. Nearly cosmopolitan, but chiefly in the northern hemisphere; breeding far north and migrating south in winter; in America, to Brazil and New Granada.

SP. CHAR. "Bill and legs strong; wings long; a very small rudimentary hind toe. *Summer:* Around the base of the bill to the eyes, neck before and under part of body black; upper parts white, nearly pure and unspotted on the forehead; sides of the neck and rump tinged with ashy, and having irregular transverse spots of brownish black on the back, scapulars and wing coverts; the brownish black frequently predominating on those parts, and the rump also frequently with transverse bars of the same. Lower parts of the abdomen, tibia and under tail coverts white, quills brownish black, lighter on the inner webs, with a middle portion of their shafts white, and a narrow longitudinal stripe of white frequently on the shorter primaries and secondaries. Tail white, with transverse imperfect narrow bands of black. The black color of the upper parts generally with a faint bronze or coppery luster, and presenting a scale-like appearance; the brownish black of the upper parts with a greenish luster. Bill and legs black; iris brown. *Younger and winter plumage:* Entire upper parts dark brown, with circular and irregular small spots of white, and frequently of yellow, most numerous on the wing coverts; upper tail coverts white. Upper parts white, with short longitudinal lines and spots of dark brownish cinereous on the neck and breast; quills brownish black, with a large longitudinal space of white on their inner webs and also on the outer webs of the shorter primaries. *Young:* Upper parts lighter, and with the white spots more irregular or less rounded; narrow lines on the neck and breast more numerous."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	11.75	25.00	7.50	3.25	1.90	1.20
Female . . .	11.50	24.50	7.40	3.25	1.90	1.20

Iris brown; bill and claws black; legs and feet dark blue.

I have found this species quite common upon both coasts, but rare inland, where it seldom stops except to rest in its migratory flights to and from its breeding grounds; usually returning leisurely along the seacoast. In its habits, it is similar to the Golden Plover, which in winter plumage it somewhat resembles, but readily known by its small hind toe, as it is the only one of our Plovers that has the same.

Wilson reports finding the birds breeding in Pennsylvania, and Audubon in the mountainous parts of Maryland, Pennsylvania and Connecticut. From the description given of their nests and eggs and their habits, they are thought by some writers to have been mistaken in the identification of the same, but they certainly could not have been in the birds which they supposed laid the eggs; and they have since, in a few cases, been known to summer within the United States. Their natural breeding grounds, however, are within the Arctic regions. In the early settlement of the country, many birds were found breeding south to the Gulf coast that are now only known to breed far north.

Their nests are mere depressions in the ground, sparingly lined with old grasses. Eggs usually four, 2.04×1.43 ; ground color brownish drab to buffy olive, blotched and speckled with dark brown to a deep black color; in shape, pyriform.

SUBGENUS CHARADRIUS LINNÆUS.

"No hind toe; axillars white or grayish."

Charadrius dominicus MULL.

AMERICAN GOLDEN PLOVER.

PLATE XII.

Migratory; abundant. Arrive the last of March to first of May; return the last of July to first of October.

B. 503. R. 515. C. 581. G. 236, 98. U. 272.

HABITAT. Nearly the whole of America; breeding in the Arctic regions; south in winter to Patagonia.

SP. CHAR. "Bill rather short, legs moderate, wings long, no hind toe, tarsus covered before and behind with small circular or hexagonal scales. *Summer plumage*: Upper parts brownish black, with numerous small circular and irregular spots of golden yellow, most numerous on the back and rump and on the upper tail coverts, assuming the form of transverse bands generally; also with some spots of ashy white. Entire under parts black, with a brownish or bronzed luster; under tail coverts mixed or barred with white. Forehead, border of the back of the neck, under tail coverts and tibia white; axillary feathers cinereous; quills dark brown; middle portion of the shafts white, frequently extending slightly to the webs, and forming longitudinal stripes on the shorter quills; tail dark brown, with numerous irregular bands of ashy white, and frequently tinged with golden yellow; bill black; legs dark bluish brown. *Winter plumage (young and adult)*: Under parts dull ashy, spotted with brownish on the neck

and breast, frequently more or less mixed with black; many spots of the upper parts dull ashy white; other spots, especially on the rump, golden yellow.

"Specimens vary in the relative amount of the black and golden on the upper parts, in the width of the white on the forehead, and other details of coloration."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.25	22.50	7.20	3.00	1.65	.90
Female	9.75	21.75	7.00	2.60	1.65	.90

Iris dark brown; bill and claws black; legs and feet dark slate.

This well-known species is very abundant in the United States during migration, from the Atlantic to the Rocky Mountains, but rare on the Pacific side south of Alaska. Their natural home is upon the seacoast, frequenting occasionally marshy or wet grounds, but as a rule prefer the sandy beach and adjacent flats and uplands; they are seldom found far inland, except during migration. At such times their flights, especially in the spring, are hurried, direct, and in the night, only stopping to rest and feed during the day; returning in a more leisurely manner and largely along the sea shore. When upon the ground these birds usually run about on straight or unbended legs, with their bodies in a horizontal position and heads drawn down close to the body; while sleeping or resting, usually sit down or stand on one leg.

In flight they are swift and strong, sweeping over the prairies in a compact, wavy form, at times skimming close to the ground, then high in air, an ever-changing, circling course, whistling as they go; and on alighting raise their wings until the tips nearly touch, then slowly fold them back, a habit which is quite common with them as they move about on the ground.

Their food consists of grasshoppers, beetles and many forms of insect life, snails, crustacea, etc.; small berries also help to make up their diet.

The following full and interesting description of their nesting habits, eggs, etc., is taken from Mr. Nelson's "Report upon Natural History Collections in Alaska:"

"About the middle of May this beautiful Plover reaches the vicinity of Saint Michael's. The earliest record I have, for the Territory, is May 13th, specimens in my possession having been

secured at Fort Reliance, on the Upper Yukon, at this date. As the breeding season approaches, it is found as one of the commonest breeding waders over the grass and moss-grown country extending along the shore of Behring Sea. In some cases they have deposited their eggs by the first of June.

“They are in full breeding dress, and are a beautiful sight as they glide about on easy wing, or feed over the marshy flats. Their soft, clear call note gives evidence of the rich song to be heard later. They soon pair and disperse, so that within a few days after the main arrival their nests may be looked for. Their nests are generally in small depressions which may be found among the moss and dried grass of a small knoll, and at times a slight structure is made of dried grass. The grass, and, perhaps, a few dead leaves of the dwarf willow are arranged in a circular, saucer-shaped form, about four or five inches across, and contain four eggs, which have a pale yellowish ground color, with very dark, well-defined umber brown spots scattered rather profusely over the shell, especially about the larger end. One set of eggs measures: 1.98 by 1.35, 2.09 by 1.30, 2.00 by 1.30, 2.08 by 1.33. This set of eggs was obtained at Stuart Island, in June. Three odd specimens measure respectively: 1.90 by 1.25, 1.92 by 1.38, and 1.86 by 1.29. A second set, obtained in June, 1880, near Saint Michael’s, measures 2.00 by 1.31, 2.09 by 1.26, and 2.02 by 1.29. The ground color is very uniform, the only variation being to a slight buffy shade, in some instances, and a slight increase, or decrease, in the abundance of dark markings.” [In shape, pyriform.]

“The male at this season has a brighter plumage than the female, and in places little frequented by man he becomes very unsuspicious; near villages, however, he is always on the lookout, and is difficult to approach even when he is found by his nest. Toward the end of May and during the first of June the male utters a clear, rich song, which is frequently heard during the twilight of the short Arctic nights.

“The courtship of this handsome bird is carried on very quietly, and I have witnessed no demonstration of anger or quarreling among the rivals. When two are satisfactorily mated they

quickly go about their nesting, after which each pair limits its range to the immediate vicinity of its treasures.”

GENUS *ÆGIALITIS* BOIE.

“Size medium or small; head without crest, and plumage without metallic gloss above. Bill variable, but usually shorter than middle toe, or, if longer, very slender; tarsus less than twice as long as middle toe.”

SUBGENUS *OXYECHUS* REICHENBACH.

Tail at least half as long as the wing, extending half its length, or more, beyond tip of closed wings; graduated for more than length of inner toe without claw; rump and upper tail coverts ochraceous; chest crossed by two black bands. (*Ridgway*.)

Ægialitis vocifera (LINN.).

KILLDEER.

PLATE XII.

Summer resident; abundant. Arrive the last of February to first of April; begin laying about the middle of April; remain until late in the fall.

B. 504. R. 516. C. 584. G. 237, 99. U. 273.

HABITAT. The whole of temperate North America; breeding throughout its range; wintering from the Gulf coast and southern California, south into northern South America.

SP. CHAR. “*Adult*: Pileum, and upper parts generally, grayish brown, inclining to umber; rump and upper tail coverts ochraceous rufous, lighter on the latter. Forehead and broad superciliary stripe, throat, nuchal collar and lower parts white. Fore part of the crown, loreal stripe continued toward the occiput, collar round neck and band across breast black. Primaries dusky, the inner quills marked on outer webs with white. Tail chiefly pale ochraceous rufous, variegated with white, dusky and grayish chiefly toward the end. Bill black; iris dark brown; eyelids (in life) orange red or scarlet; legs and feet pale pinkish grayish, or pale grayish yellow. *Young*: Similar to the adult, but feathers of the upper parts more or less conspicuously margined with pale rusty or fulvous. *Downy young*: Upper parts generally, including pileum, light grayish brown, the two areas of this color bounded all round by black, a wide collar of which crosses the jugulum and, extending across the nape beneath a broad, white collar, completely encircles the neck; a broad bar of velvety black down the middle of the humeral region, and a narrow, more interrupted stripe of the same down the rump. Forehead, throat, lower parts generally, ‘hand wing’ and posterior border of the humerus pure white; the flanks and crissum more Isabella color; a narrow black line running from the rictus to the eye.”

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.50	20.50	6.60	4.00	1.45	.75
Female...	10.00	20.00	6.50	4.00	1.45	.75

This noisy, familiar species frequents alike the high prairies,

the low lands, margins of streams or pools of water; in fact, appears to be at home wherever it may alight. As a rule it is easily approached, not being either wise or timid. While collecting in the winter of 1889, at Coatapec, Mexico, a pair came daily to feed and dress up their feathers beside a little run or gutter in the center of the narrow paved street opposite my room in the hotel, regardless of the people on the sidewalks, only running or dodging to avoid a person crossing, or to keep out of the way of the pack mules, etc., that are almost continually passing; and it is not uncommon for the birds to alight upon our streets and within our dooryards. Upon the ground they run swiftly, but with too stiff legs to be graceful, often squatting to rest or hide.

The parent birds both assist in hatching and raising the young, and are very solicitous and demonstrative in their efforts to protect them; and, in doing so, beautifully display, with quivering wings and fan-spread tail, their varied colors. Upon the wing they are swift and easy, and at all times make known their approach and presence in a vociferous manner. Their food consists chiefly of insect life.

Their nests are placed on the dry ground, in a small depression, usually beneath a bunch of grass or weeds, in the vicinity of streams and pools of water, lined sparingly with bits of old grass or weeds, chiefly about the edges. Eggs, usually four, 1.45x1.05; buff to drab white, spotted and blotched with umber and blackish brown; thickest about larger end; pyriform in shape, very obtuse at larger end and sharply pointed at the other.

SUBGENUS *ÆGIALITIS* BOIE.

Tarsus less than twice as long as bill, measured from anterior point of loreal feathering; chest with a black, grayish or rusty band, sometimes interrupted in the middle portion. (*Ridgway*.)

***Ægialitis semipalmata* BONAP.**

SEMIPALMATED PLOVER.

PLATE XII.

Migratory; not uncommon. Arrive in April to middle of May; begin to return early in August, occasionally remaining until late in the fall.

B. 507. R. 517. C. 586. G. 238. 100. U. 274.

HABITAT. The whole of North America; breeding chiefly within the Arctic regions; winters from California and the Gulf coast, south to Brazil and Peru.

SP. CHAR. "Small; wings long; toes connected at base, especially the outer to the middle toe. Front, throat, ring around the neck and entire under parts white; a band of deep black across the breast, extending around the back of the neck below the white ring. Band from the base of the bill, and under the eye, and wide frontal band above the white band, black. Upper parts ashy brown; quills brownish black, with their shafts white in a middle portion, and occasionally a lanceolate white spot along the shafts of the shorter primaries; shorter tertiaries edged with white; greater coverts tipped with white. Middle feathers of the tail ashy brown, with a wide subterminal band of brownish black, and narrowly tipped with white; two outer tail feathers white, others intermediate, like the middle, but widely tipped with white. Bill orange yellow at base, black terminally; legs pale flesh color. *Female*: Similar, but rather lighter colored. *Young*: With the black replaced by ashy brown, the feathers of the upper parts bordered with paler. *Downy young*: Above, pale grayish brown, mottled with black; a frontal crescent, broad nuchal collar and entire lower parts white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.10	15.20	4.75	2.30	.95	.52
Female . .	7.00	15.00	4.70	2.20	.95	.50

This species is quite common in suitable localities throughout the continent; breeding north into Greenland. They are often met with upon low, marshy grounds, but seem to prefer the sandy shores and barren lands, where they run about in a swift but uncertain manner, suddenly stopping to pick up an insect or any minute form of life that exists upon their feeding grounds; and though gregarious, move about in a silent, unsocial manner, regardless of each other; but the moment they are startled, spring into the air with a whistling, warning note, quickly bunch together, and sweep swiftly away, scattering, without stopping to look, the moment they alight, as if forgetful of the scare, and heedless of danger.

Their nests are mere cavities in the ground, lined occasionally with a few withered leaves or grasses. Eggs usually four, 1.26x.94; pale dull buff to olive buff, irregularly speckled and spotted, chiefly about the larger end, with dark brown or black; in shape, rather pyriform.

Ægialitis meloda circumcincta RIDGW.

BELTED PIPING PLOVER.

In my first catalogue I entered this bird in the list to be looked for in the State. I have met with them in Texas, and they are known to breed north of us, and it is strange they have not been found, as this is about the center of their natural range. I therefore think it safe to add them to our list as migratory birds.

B. —. R. 520. C. 588. G. —, —. U. 277a.

HABITAT. The Mississippi valley, and north to Lake Winnipeg (occasionally east to the Atlantic coast); breeding from northern Illinois and Nebraska northward; wintering on the Gulf coast and southward.

SP. CHAR. "*Adult male:* Forehead, lores, nuchal collar and lower parts white. In summer a band across fore part of crown, and one around the lower neck (forming a continuous pectoral band), black or dusky. In winter these markings replaced by light brownish gray; head above and upper parts of body light brownish cinereous; rump and upper tail coverts lighter, and often nearly white; quills dark brown, with a large portion of their inner webs and shafts white; shorter primaries with a large portion of their outer webs white; tail at base white, and with the outer feathers white; middle feathers with a wide sub-terminal band of brownish black, and tipped with white; bill orange at base, tipped with black (in winter almost wholly black); legs orange yellow. *Female:* Similar to the male, but with the dark colors lighter and less in extent. *Young:* No black band in front; collar around the neck ashy brown."

I have no measurements of this bird. Mr. Ridgway, in "*American Naturalist*," Vol. 8, p. 109, gives the following dimensions of an adult male: "Wing, 4.60; tail, 2.30; culmen, .50; tarsus, .85; middle toe, .55. Type, No. 9035, male ad., Nat. Mus., Loup Fork of the Platte, July 8; Dr. F. V. Hayden. Length, $6\frac{1}{2}$; extent, $14\frac{1}{4}$."

As their name indicates, these birds have a soft, low, piping note, which they utter not only upon the wing but occasionally as they run about upon the ground, and, during the early breeding season, a peculiar, loud, prolonged, musical call, that readily attracts attention. I say in the breeding season, because, when I met with them on the Gulf coast, I did not hear it until the early spring. In other respects, their habits are not noticeably different from the Semipalmated.

Their nests are without lining, a mere depression in the sand.

Eggs usually four, 1.27x.95; ground color light gray to creamy buff, finely and rather sparsely speckled or dotted with blackish brown and purplish gray; in shape, abruptly pyriform.

***Ægialitis nivos* CASS.**

SNOWY PLOVER.

PLATE XII.

Summer resident on the salt plains along the Cimarron River, in the Indian Territory, the northern limits of which extend across the State line into southern Comanche county; quite common. Arrive about the first of May; begin laying the last of May.

B. 509. R. 521. C. 591. G. —, —. U. 278.

HABITAT. Western North America, north into northern California, east to Kansas, Texas and Cuba; south in winter to Chili.

SP. CHAR. "Bill slender, wholly deep black, as long as the middle toe. *Adult male:* Forehead, superciliary region, indistinct nuchal collar and entire lower parts pure white; a band across the fore part of the crown, auriculars and transverse patch on each side of the breast black. Upper parts rather light brownish gray, the crown and occiput usually tinged with light reddish buff. Primaries dusky, with white shafts, the inner quills marked with white; inner secondaries almost wholly white. Two outer tail feathers wholly white, the rest growing gradually darker to the inner pair, which are wholly dusky. *Adult female:* Similar to male, but the black markings less distinct (sometimes nearly obsolete). Bill and eyelids deep black; iris deep brown; legs dull slate color; toes black; interior of mouth fleshy white. *Young:* More ashy above, the black markings replaced by ashy; feathers of the upper parts indistinctly bordered with whitish. *Downy young:* Above, pale grayish buff, interrupted by a white nuchal collar, the whole of the colored portion irregularly mottled with black. Forehead, lower parts and 'hand wing' white. A distinct postocular streak of dusky."

The Kansas birds, and specimens since collected by Mr. Sennett, in Texas, are lighter in color, and present a more bleached appearance than the California specimens examined; but, as the birds vary somewhat in shadings, it is probable that with a larger number before us the difference would be less apparent, and remove the thought at first entertained, that they were entitled to sub-specific separation.

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.60	13.50	4.10	1.95	.95	.60
Female	6.50	13.20	4.00	1.80	.95	.60

Iris dark brown; bill and claws black; legs and feet bluish gray.

A strictly marine bird, one only found inland upon the salt, sandy plains or along the shores of salt water; breeding within their range as far south as Cuba.

Their food consists of crustacea and various minute forms of life. They are similar in actions to the Semipalmated, and fully as silent; at least I never heard one utter a note except as the young are approached—when they are very demonstrative—or when suddenly flushed, which, in the breeding season, is very difficult to do, as they prefer to escape by running, dodging, and squatting the moment they think they are out of danger, in hopes that you will pass them unobserved, as the sandy lands they inhabit closely resemble their plumage in color, and you will certainly do so should you look away or fail to go directly to the spot.

June 18th, 1886, (the first discovery of the birds east of Great Salt Lake), I found them nesting and with young upon the salt plains, as located above, and startled one from her nest; a mere depression worked out in the sand to fit the body. It was without lining, and nothing near to shelter or hide it from view. It contained three eggs (a full set), nearly ready to hatch; dimensions: 1.20 x .90, 1.20 x .89, 1.22 x .89; ground color pale olive drab (approaching a light clay color, with a greenish tint), rather evenly and thickly marked with irregular-shaped, ragged-edged splashes and dots of blackish brown; in shape, rather pyriform.

SUBGENUS PODASOCYS COUES.

“Bill rather small and slender (much as in *Oxyechus*), but longer than the middle toe; tarsus considerably more than twice as long as the middle toe. Tail short, even, scarcely reaching to the ends of the folded wings. Plumage exceedingly plain.”

***Ægialitis montana* (TOWNS.).**

MOUNTAIN PLOVER.

PLATE XII.

Summer resident in western to middle Kansas; common. Arrive about the first of April; begin laying early in May; return late in the fall.

B. 505. R. 523. C. 592. G. 239. 101. U. 281.

HABITAT. Western North America; east into Texas and Dakota; north to the British possessions; wintering in Southern California, Texas and southward; accidental in Florida.

SP. CHAR. "*Adult, breeding plumage*: Wide frontal crescent, superciliary stripe and entire lower parts white, purest on the forehead, of a more or less soiled tint beneath, the jugulum shaded with light grayish brown, most distinct laterally, where insensibly merging into the color of the upper parts. Fore part of the crown and stripe from the rictus to the eye (across lores) black. Rest of upper parts uniform light grayish brown, the remiges and tail dusky; shafts of primaries white. *Adult, in spring*: Similar to the above, but upper parts and jugulum tinged with light buffy ochraceous. *Adult and young, in winter*: More strongly tinged with buff, both above and below; the black markings of the head wanting. *Young, first plumage*: All the feathers of the upper parts distinctly bordered with light buff; whole side of head and neck and entire jugulum deep light creamy buff. *Downy young*: Above, brownish buff mottled with black, this forming a distinct marbling on the crown and occiput, where the ground color is lighter and clearer buff. Lower parts pale buff, immaculate.

"There is considerable individual variation in the extent and distinctness of black on the head in fully adult birds, some specimens having the whole crown black, while in others this color is limited to a crescentic mark just behind the white of the forehead; in some examples the black loreal stripe is barely indicated."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male.....	8.80	18.25	5.75	2.60	1.50	.90
Female...	9.25	19.50	6.00	2.70	1.60	.90

Iris dark brown; bill and claws black; legs pale brown; feet dark brown.

These birds inhabit high prairies and sterile plains, rather than the mountains as their name indicates, and seldom frequent the water's edge or low, wet grounds; in other respects their habits do not materially differ from others of the family.

Their note is a rather low, pleasing whistle. Their food is chiefly grasshoppers. I have found them breeding in Kansas, Colorado and Wyoming, and they no doubt breed within the United States throughout their range.

Their nest is a slight depression in the ground, lined sparingly with the leaves of grasses. Eggs usually three or four, 1.47x1.11; deep olive to brownish drab, sprinkled with fine dots of blackish brown and neutral tints; pyriform in shape, but not so sharply pointed as other species of this genus. A set of three eggs, collected in Wyoming, June 6th, 1886, measure: 1.47x1.06, 1.52x1.13, 1.53x1.10.



PLATE XIII.

1. BOB-WHITE; Male. 2. Female. 3. TEXAN BOB-WHITE; Male. 4. Female. 5. RUFFED GROUSE; Male. 6. Female. 7. PRAIRIE HEN; Male. 8. Female. 9. BOB-WHITE; Male. 10. Female. 11. SHARP-TAILED GROUSE; Female.

ORDER GALLINÆ.

GALLINACEOUS BIRDS.

"Bill generally short, stout, convex, with an obtuse vaulted tip, corneous except in the nasal fossa, and without restriction in its continuity. Nostrils scaled or feathered. Tomia of upper mandible overlapping. Frontal feathers forming re-entrant outline at the base of upper mandible. Legs usually feathered to the tarsus or beyond. Hallux elevated, with a few exceptions (*e. g.*, *Cracidae* and *Megapodidae*) smaller than the anterior toes, occasionally wanting (as in the Hemipods). Tarsus (when not feathered) generally broadly scutellate. Front toes commonly webbed at base. Claws blunt, little curved. Wings strong, short, and concavo-convex. Rectices commonly more than twelve. Head small. Plumage usually after shafted. Carotids double, except *Turnicidae* and *Megapodidae*. No intrinsic syringeal muscles. Sternum very deeply, generally doubly, notched. Palate schizognathous. Chiefly polygamous. Præocial and ptilopædic."

SUBORDER PHASIANI. PHEASANTS, GROUSE, PARTRIDGES, QUAILS, ETC.

Hind toe small, short (much less than half as long as lateral toes), and inserted above the level of the anterior toes. (*Ridgway.*)

FAMILY TETRAONIDÆ. GROUSE, PARTRIDGES, ETC.

Tarsi without spurs; head entirely feathered (except sometimes over eyes), and tail not vaulted. (*Ridgway.*)

SUBFAMILY PERDICINÆ. PARTRIDGES.

Tarsi and nasal fossæ entirely naked; sides of toes not pectinated; smaller (wing less than 6.00). (*Ridgway.*)

GENUS COLINUS LESSON.

"Bill stout; head not conspicuously crested; tail short, scarcely more than half the wing, composed of moderately soft feathers; wings normal; legs developed, the toes reaching considerably beyond the tip of the tail; the lateral toes short, equal, their claws falling decidedly short of the base of the middle claw."

Colinus virginianus (LINN.).

BOB-WHITE.

PLATE XIII.

Resident; abundant from the eastern to the middle portion of the State, moving westward and increasing with its settlement. Begin laying the last of April.

B. 471. R. 480. C. 571. G. 223. 102. U. 259.

HABITAT. Eastern United States; north into Lower Canada; south to the Gulf States; west to Dakota, Kansas, Indian Territory and eastern Texas.

SP. CHAR. "Forehead, and line through the eye and along the side of the neck, with chin and throat, white. A band of black across the vertex, and extending backwards on the sides, within the white, and another from the maxilla beneath the eye, and crossing on the lower part of the throat; the under parts are white, tinged with brown anteriorly; each feather with several narrow, obtuse, V-shaped bands of black; the fore part of back, the side of the breast, and in front just below the black collar, of a dull pinkish red; the sides of body and wing coverts brownish red; the latter almost uniform, without indication of mottling; scapulars and upper tertials coarsely blotched with black, and edged internally with brownish yellow; top of head reddish; the lower part of neck, except anteriorly, streaked with white and black; primary quills unspotted brown; tail ash. *Female:* With the white markings of the head replaced by brownish yellow; the black ones with brownish. *Young:* Head ashy, with a narrow postocular white stripe, and the crown spotted with black; throat whitish; beneath pale dingy ashy, with whitish shaft streaks, and without black bars or other markings; above reddish or olivaceous drab, the feathers with whitish shaft streaks, and a large black spot, mostly on upper web. *Chick:* Head dingy buff; an auricular dusky elongated spot, and a vertical patch of chestnut rufous, widening on the occiput."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.00	15.00	4.45	2.70	1.25	.55
Female . . .	9.50	14.70	4.35	2.65	1.25	.50

Iris brown; bill dark brown, usually pale brown at base of under mandible; legs and feet pale bluish to brownish gray; claws black.

This familiar species is generally known in the New England and Middle States as the Quail, and in the Southern States as the Partridge. These names belong to other and quite different—though closely allied—birds. At the suggestion of Professor Baird, "Bob-white," its cheerful call note, has become its accepted and present name. The birds appear to thrive best in the presence of man, and, were they protected and fed during our cold winters, would soon become quite tame. They often nest near our dwellings. In the spring of 1867, I was shown, on Owl Creek, Woodson county, Kansas, a nest containing nineteen eggs. It was placed in the dooryard, and not over twenty-

five yards from the house; several dogs were running about the yard, and the house cat was purring in the doorway. Fearing the eggs would be destroyed, I suggested the building of a high, tight fence around the nest. "Oh!" said the farmer, "that is not necessary; our cats and dogs will not harm them, for they know them well, as they have for a long time run about with the chickens, and feed with them from food thrown from the door step." I am confident if man was as friendly to the birds as they are to man, that they would soon become thoroughly domesticated. Trapped and hunted as they are, with dog and gun, it is not strange that, as a whole, they remain timid and mistrustful, and, were they not naturally birds of civilization, would rapidly disappear with the settlement of a country. As it is, they seem to realize that man is only at times their enemy, and that his cultivated fields afford them a safe resort from their many other enemies, and insure a more certain and bountiful supply of food than found elsewhere.

In the destruction of injurious insects, and the seeds of weeds, upon which they largely feed, they more than doubly repay for the few grains eaten prior to the harvest.

Their flesh is highly esteemed, and to the wing shot a most attractive game bird. When startled, rise with a loud whirring sound; in flight very swift, low, and direct; a rather laborious effort, dropping back into the first inviting cover. They do not, like our Prairie Hens, collect in large flocks, but move about in small coveys or family groups; pairing during the breeding season, and, although not strictly true to each other in their marriage relations, are very attentive and share alike in the duties of protecting and rearing the young.

Their nests are placed on the ground, in a depression, usually in the grass upon the prairies, sometimes in a thicket, under a low bush; composed of grasses, and usually arched over, with entrance on the sides. Eggs fifteen to twenty, 1.20x.97; pure white; in shape, pyriform. Nests found with a larger number of eggs, I think the product of two or more females.

Colinus virginianus texanus (LAWR.).**TEXAN BOB-WHITE.**

PLATE XIII.

This southwestern race, as a bird of Western Kansas, rests on two specimens — adult females — in the U. S. National Museum, collected May 27th, 1864, by Dr. Elliott Cones, on the Republican River, in the northwestern part of the State. I have been informed by military men and hunters that Bob-whites were occasionally seen on the Cimarron River, south of Fort Dodge, from 1862 to 1866. This was long before our birds, in following up the settlements, had reached the central portion of the State, and it is safe to conclude that the birds found there were of this variety; and that they reached that vicinity by following the old military trail north through the Indian Territory, for the grains scattered along the route and at feeding and camping places. Of late years the trail has been little used, and as the country was without a settlement their disappearance can be accounted for on the grounds that they have been destroyed by enemies, or, for want of food and shelter, could not survive the cold winters.

B. 472. R. 480b. C. 573. G. —, —. U. 289b.

HABITAT. Northeastern Mexico, western Texas, and occasionally north to western Kansas.

SP. CHAR. "General appearance that of *C. virginianus*. Chin, throat, forehead and strip over the eye white. Stripe behind the eye, continuous with a collar across the lower part of the throat, black. Under parts white, with zig-zag transverse bars of black. Above, pale brownish red, strongly tinged with ash, the feathers all faintly though distinctly mottled with black; the lower back, scapulars and tertials much blotched with black, the latter edged on both sides and to some extent transversely barred with brownish white. Secondaries with transverse bars of the same on the outer web. Wing coverts coarsely and conspicuously barred with blackish. Lower part of neck (except before) streaked with black and white.

"Female with the white of the head changed to brownish yellow; the black of the head wanting."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	9.25	14.25	4.25	2.50	1.15	.55
Female	9.00	14.00	4.20	2.40	1.15	.50

Iris brown; bill and claws black; legs and feet olive gray.

This bleached and smaller form (one of several) does not in its habits differ from the more eastern or typical Bob-white.

A set of seven eggs, collected in the spring of 1882, at Corpus Christi, Texas, measure: 1.15x.92, 1.13x.94, 1.04x.98, 1.20x.95, 1.10x.94, 1.07x.89, 1.12x.95.

SUBFAMILY TETRAONINÆ. GROUSE.

At least upper half of tarsus feathered (usually feathered to toes); nasal fossæ densely feathered; sides of toes pectinated in winter (the points deciduous in summer). (*Ridgway.*)

GENUS **BONASA** STEPHENS.

Lower portion of tarsus completely naked; tail nearly as long as wing, fan shaped; sides of neck with a broad tuft or ruff of soft, broad-webbed feathers. (*Ridgway.*)

Bonasa umbellus (LINN.).

RUFFED GROUSE.

PLATE XIII.

A resident in the eastern portion of the State prior to its settlement; but, being a bird of the woods, its range was confined to the timber skirting the streams, and, upon the settlement of the same, they quickly disappeared, as the tramping and browsing of the cattle during the winters destroyed the undergrowth, their favorite resorts, and left them no longer a hiding place or natural home. Much of the wooded land is now under fence, and where not pastured the growth is dense, and I feel confident that, if introduced and protected, they would soon become a permanent resident in every inviting grove.

B. 465. R. 473. C. 565. G. 218, 103. U. 300.

HABITAT. Eastern United States, north to Massachusetts and southern Wisconsin (north of this range the Canadian Ruffed Grouse); west to the edge of the Great Plains; south to Georgia, Tennessee, Arkansas, etc.

SP. CHAR. "Above, ochraceous brown finely mottled with grayish; the scapulars and wing coverts with pale shaft streaks, the rump and upper tail coverts with medial cordate spots of pale grayish. Tail ochraceous rufous, narrowly bordered with black, crossed terminally with a narrow band of pale ash. then a broader one of black, this preceded by another ashy one. Throat and foreneck ochraceous. Lower parts mixed whitish and buff, the latter chiefly beneath the surface, with broad, transverse bars of dilute brown, these mostly concealed on the abdomen. Lower tail coverts pale ochraceous, each with a terminal deltoid spot of white bordered with dusky. Neck tufts brownish black. Length, 18.00; wing, 7.20; tail, 7.00. *Female:* Smaller, and with the neck tufts less developed, but colors similar. *Young:* Brown above and dingy

white beneath; a rufous tinge on the scapulars. Feathers of the jugulum, back, scapulars and wing coverts with broad, medial streaks of light ochraceous, and black spots on the webs; jugulum with a strong buff tinge. Secondaries and wing coverts strongly mottled transversely. Head dingy buff, the upper part more rusty; a postocular or auricular dusky patch, and a tuft of dusky feathers on the vertex. *Chick*: Above, light rufous, beneath, rusty white; uniform above and below; a dusty postocular streak, inclining downwards across the auriculars. Bill, whitish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	18.00	23.50	7.25	6.50	1.65	.70
Female . . .	16.50	22.50	6.75	5.50	1.60	.65

Iris brown; bill light brown, with base of under pale; feet grayish brown; claws dark brown.

This beautiful game bird, erroneously (but generally) known as Partridge in the Northern States, and as Pheasant in the Southern States, inhabits the thickets and edges of the wooded lands. Its food consists of insect life, seeds, berries, and tender buds; the latter is its chief food during the winter and early spring months. When on the ground it moves about with outspread tail and a dignified step. When startled, it rises with a whirring sound of the wings; at other times, in a noiseless manner. Its flights are low and short, but swift as an arrow.

The birds begin to pair early in the spring, and commence laying the last of April to first of May. During the fall and winter months they are usually found alone or in family groups, never in large flocks.

The peculiar drumming noise of the male, heard during the early breeding season and occasionally until late in the fall, has led to much controversy as to the cause producing the same, and the conclusions reached are various, viz., "striking the wings against a log, the body, the air, etc.," but by many it is believed to be vocal, and for this reason it was given its generic name, *Bonasa*, from *bonasus*, a wild bull. From observation, I am led to believe the sound comes chiefly if not wholly from the quick, downward strokes of its short, concave wings upon the air; a thrilling motion of joy, like the flapping of the rooster as he crows.

Their nests are placed on the ground, in groves and at the edge of timber; a place worked out to fit the body, and rather sparingly and loosely lined with grasses and leaves. Eggs seven to twelve, 1.55x1.15; cream white, occasionally faintly blotched with drab or buff; in form, oval approaching pyriform.

GENUS **TYMPANUCHUS** GLOGER.

"Tail of eighteen feathers, short, half the lengthened wings; the feathers stiffened and more or less graduated. Bare, inflatable air sac of the neck concealed by a tuft of long, stiff, lanceolate feathers; an inconspicuous crest on the vertex. Tarsi feathered only to near the base, the lower joint scutellate. Culmen between the nasal fossæ scarcely one-third the total length."

Tympanuchus americanus (REICH.).

PRAIRIE HEN.

PLATE XIII.

Common in the eastern to middle portion of the State, and spreading westward with its settlement. Formerly abundant, but rapidly decreasing in numbers, and, unless the law protecting them is strictly enforced, especially so far as it relates to trapping, they will soon become exterminated; for during the extreme cold winters, when the ground is covered with snow, hunger overcomes their fear, and the last one is easily entrapped.

B. 464. R. 477. C. 563. G. 219, 104. U. 305.

HABITAT. Prairies of the Mississippi valley, east to Indiana and Kentucky; north to Manitoba; west to eastern Dakota; south to Texas and Louisiana. (The eastern bird, *T. cupido*, until of late supposed to be this species, is now apparently extinct, except on the island of Martha's Vineyard.)

SP. CHAR. "*Male:* Ground color above, ochraceous brown, tinged with grayish; beneath white, the feathers of the jugulum dark rusty chestnut beneath the surface. Head mostly deep buff. Upper parts much broken by broad, transverse spots or irregular bars of deep black, this color predominating largely over the lighter tints. Primaries and tail plain dusky; the former with roundish spots of pale ochraceous on outer webs, the latter very narrowly tipped with white. Lower parts with irregular, continuous, sharply-defined, broad bars or narrow bands of clear dusky brown. A broad stripe of plain, brownish black on side of head, beneath the eye, from rictus to end of auriculars; a blotch of the same beneath the middle of the auriculars and the top of the head mostly blackish, leaving a broad superciliary and maxillary stripe, and the whole throat immaculate buff. Neck tufts 3.50 inches long, deep black; the longer ones uniform, the shorter with only the edge black, the whole middle portion pale buff.

shading into deep reddish rusty next to the black. *Female*: Similar, but with shorter and inconspicuous cervical tufts. *Young*: Above, including tail, yellowish brown; feathers with conspicuous white shaft streaks and large blotches of deep black. Outer webs of primaries with whitish spots. Top of head rusty brown, with a black vertical and a dusky auricular patch. Lower parts yellowish white, with irregularly-defined, transverse, grayish brown, broad bars; anteriorly more spotted, the jugulum tinged with brown. *Chick*: Bright lemon buff, tinged on sides and jugulum with reddish; upper parts much washed with rusty. A narrow auricular streak, blotched on the vertex and occiput, a stripe across the shoulder, and blotches down the middle of the back and rump, deep black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	18.25	29.50	9.00	4.25	1.80	.65
Female . . .	17.25	28.00	8.50	3.90	1.75	.60

Iris brown; bill and claws dark brown; feet yellowish.

~ This familiar game bird inhabits our fertile prairies, seldom frequenting the timbered lands, except during sleety storms, or when the ground is covered with snow. Its flesh is dark, and it is not very highly esteemed as a table bird.

During the early breeding season they feed largely upon grasshoppers, crickets and other forms of insect life, but afterward chiefly upon our cultivated grains, gleaned from the stubble in autumn and the corn fields in winter; they are also fond of tender buds, berries and fruits. They run about much like our domestic fowls, but with a more stately carriage. When flushed, rise from the ground with a less whirring sound than the Ruffed Grouse or Bob-white, and their flight is not as swift, but more protracted, and with less apparent effort, flapping and sailing along, often to the distance of a mile or more. In the fall the birds collect together, and remain in flocks until the warmth of spring quickens their blood, and awakes the passions of love; then, as with a view to fairness and the survival of the fittest, they select a smooth, open courtship ground, (usually called a "scratching ground,") where the males assemble at the early dawn, to vie with each other in courage and pompous display, uttering at the same time their love call, a loud booming noise; as soon as this is heard by the hen birds desirous of mating, they quietly put in an appearance, squat upon the ground, apparently indifferent observers, until claimed by victorious rivals, which they gladly accept, and receive their caresses. x I have

often lain and watched their amorous actions, described in so life-like a manner by Audubon. His statement that the vanquished and victors alike leave the grounds to search for the females is true, but he omits to state that many are present, and mate upon the "scratching grounds." The birds are not strictly true to each other during the love season, and this is true of most birds when the assistance of the male is not required in hatching and rearing of the young.

Their nests are placed on the ground in the thick prairie grass, and at the foot of bushes on the barren ground; a hollow scratched out in the soil, and sparingly lined with grasses and a few feathers. Eggs eight to twelve, 1.68x1.25; tawny brown, sometimes with an olive hue, and occasionally sprinkled with brown; in form, rather oval. A set of nine eggs, collected at Pewaukee, Wisconsin, May 27th, 1883, measure: 1.65x1.27, 1.64x1.24, 1.66x1.22, 1.69x1.23, 1.62x1.24, 1.69x1.28, 1.61x1.27, 1.64x1.26, 1.64x1.25.

***Tympanuchus pallidicinctus* (Ridgw.).**

LESSER PRAIRIE HEN.

PLATE XIII.

Resident in the southern part of the State; rare.

B. —. R. 477a. C. 564. G. 220, 105. U. 307.

HABITAT. Not fully known. Ridgway says: "Eastern borders of the Great Plains, from Nebraska (?), southwestern Kansas, southwestern Missouri (?), and western part of Indian Territory to western Texas." I have only met with the birds in the Indian Territory and southeastern Kansas.

SP. CHAR. "Much smaller and lighter in color than *T. americanus*. Upper parts rather evenly barred with narrow, pale brownish to dusky and pale grayish, ochraceous. Beneath, whitish with narrow bars of pale brown; iris brown; bill dark brown; feet yellow; claws brownish black."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	16.70	27.25	8.25	4.00	1.60	.60
Female ...	15.60	26.50	8.10	3.65	1.60	.58

The above description and measurements are taken from a pair of birds in the "Goss Ornithological Collection," captured in Neosho county, Kansas.

This small, bleached species does not differ in habits from our common Prairie Hen, *T. americanus*.

GENUS **PEDIOCÆTES** BAIRD.

"Tail short, graduated; exclusive of the much lengthened middle part, where are two feathers (perhaps tail coverts), with parallel edges and truncated ends half the full rounded wing; tarsi densely feathered to the toes and between the bases; neck without peculiar feathers; culmen between the nasal fossæ not half the total length."

PedIOCætes phasianellus campestris RIDGW.

PRAIRIE SHARP-TAILED GROUSE.

PLATE XIII.

A common resident in the western part of the State. Formerly met with occasionally in the eastern portion, but, being a bird of the wild prairies and the open woodlands, it is gradually retreating westward as the settlements advance, and will soon be a rare bird, to be looked for only in the sand hills and unsettled portions of the State.

B. —. R. —. C. —. G. 221,* 106. U. 308b.

HABITAT. Plains and prairies east of the Rocky Mountains; east to Wisconsin; north to Manitoba; south to New Mexico.

COMMON CHARACTERS OF THE SPECIES. *Adult male:* Above, varied with irregular spotting and barring of black and brownish; wing coverts with large roundish white spots, and scapulars streaked medially with same; outer webs of quills spotted with white; beneath, white, varied with mostly V-shaped marks of dusky, chiefly on anterior and lateral portions. *Adult female:* Similar to male but somewhat smaller, and with middle tail feathers shorter. *Young:* Above brownish, spotted and barred with black and conspicuously streaked with white; outer webs of quills spotted with white; lower parts dull whitish, the chest, breast, sides and flanks spotted with dusky. *Downy young:* Bright buffy yellow, the upper parts tinged with light rusty and coarsely marbled with black; a small black spot on middle of crown, and several larger black markings on occiput and hind neck, but fore part of head, all round, immaculate. (*Ridgway.*)

SP. CHAR. Lighter colored, the general color of upper parts buffy grayish or light brownish of various shades, always predominating over black markings, the white markings on scapulars and wings not conspicuously contrasted with the general color; feathering of feet pale brownish gray. Ground color above more rusty or ochraceous. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	18.25	28.25	8.50	5.25	1.72	.87
Female...	17.50	26.50	8.00	4.75	1.70	.80

* Entered in first catalogue as *P. phasianus columbianus* (ORD.).

Iris and feet brown; bill and claws dark brown to dusky.

This bird inhabits the open prairies during the summer months, retiring in winter to the ravines and wooded lands; and when the snow is deep and the weather severe, often hide and roost beneath the snow. They feed chiefly on grasshoppers, seeds, buds, blossoms, berries, etc.

Their flesh is lighter in color and more highly esteemed than that of the Prairie Hen. When walking about on the ground they stand high on their legs, with their sharp-pointed tail slightly elevated, and, when flushed, rise with a whirring sound of the wings, uttering as they go a guttural "Kuk, kuk, kuk," and swiftly wing themselves away in a direct course. The birds have several cackling notes, and the males a peculiar crowing or low call, that in tone sounds somewhat like the call of the Turkey. In the early spring, as the love season approaches, they select a mound or slight elevation on the open prairies for a courtship ground, where they assemble at early dawn, the males dancing and running about in a circle before the females, in a most ludicrous manner, facing each other with lowering head, raised feathers and defiant looks, crossing and recrossing each other's paths in a strutting, pompous way, seldom fighting, each acting as if confident of making the greatest display, and thus to win the admiration of and capture the hen of his choice. These meetings and dances are kept up until the hens cease laying and begin to sit. The hens attend wholly to the hatching and rearing of the young, and are attentive and watchful mothers.

Their nests are placed in a tuft of grass or under a low, stunted bush; a hollow worked out in the ground to fit the body, usually lined with a few blades of grass arranged in a circular form. Eggs six to thirteen, 1.67x1.24; varying from light clay or drab to olive brown, often plain, but generally speckled with fine dottings of dark brown; in form, rather pointed oval.

FAMILY PHASIANIDÆ. PHEASANTS, ETC.

Hind toe small, short (much less than half as long as lateral toes), and inserted above the level of the anterior toes. Tarsi with spurs; head naked, or else tail long and vaulted. (*Ridgway.*)

SUBFAMILY MELEAGRINÆ. TURKEYS.

"Bill moderate; the nasal fossæ bare. Head and neck without feathers, but with scattered hairs and more or less carunculated, an extensible, fleshy process on the forehead, but no development of the bone. Tarsus armed with spurs in the male. Hind toe elevated. Tail nearly as long as the wing, truncate, of more than twelve feathers."

GENUS MELEAGRIS LINNÆUS.

"Legs with transverse scutellæ before and behind; reticulated laterally. Tarsi with spurs. Tail rounded, rather long, usually of eighteen feathers. Forehead with a depending, fleshy cone. Head and the upper half of the neck without feathers. Breast of male in most species with a long tuft of bristles."

Meleagris gallopavo LINN.

WILD TURKEY.

PLATE XIV.

An abundant resident in the early settlement of the State, but now nearly extinct. Begin laying early in April.

B. 457. R. 470. C. 554. G. 217, 108. U. 310.

HABITAT. Eastern United States; north to southern Canada; south to Florida and eastern Texas; west along the timbered streams to the edge of the Great Plains. The Mexican Turkey, *M. gallopavo mexicana*, occurs southwest of the limits as given.

SP. CHAR. "The naked skin of the head and neck is blue; the excrescences purplish red; the legs red. The feathers of the neck and body generally are very broad, abruptly truncate, and each one well defined and scale-like; the exposed portion coppery bronze, with a bright coppery reflection in some lights—in the specimens before us, chiefly on the under parts. Each feather is abruptly margined with velvet black, the bronze assuming a greenish or purplish shade near the line of junction, and the bronze itself sometimes with a greenish reflection in some lights. The black is opaque, except along the extreme tip, where there is a metallic gloss. The feathers of the lower back and rump are black, with little or no copper gloss. The feathers of the sides behind, and the coverts, upper and under, are of a very dark purplish chestnut, with purplish metallic reflections near the end, and a subterminal bar of black; the tips are of the opaque purplish chestnut referred to. The concealed portion of the coverts is dark chestnut, barred rather finely with black; the black wider than the interspaces. The tail feathers are dark brownish chestnut, with numerous transverse bars of black, which, when most distinct, are about a quarter of an inch wide and about double their interspaces; the extreme tip for about half an inch is plain chestnut, lighter than the ground color; and there is a broad subterminal bar of black about two inches wide on the outer feathers, and narrowing to about three-quarters of an inch to the central ones. The innermost pair scarcely shows this band, and the others are all much broken and confused. In addition to the black bars on each feather, the chestnut interspaces are sprinkled with black.



PLATE XIV.

1. WILD TURKEY, Male. 2. FEMALE. 3. PASSENGER PIGEON; Male. 4. MOURNING DOVE; Male. 5. FEMALE. 6. TURKEY VULTURE, Male. 7. BLACK VULTURE, Female.

The black bands are all most distinct on the inner webs; the interspaces are considerably lighter below than above.

“There are no whitish tips whatever to the tail or its coverts. The feathers on the middle of the belly are downy, opaque, and tipped obscurely with rusty whitish.

“The wing coverts are like the back; the quills, however, are blackish brown, with numerous transverse bars of white half the width of the interspaces. The exposed surface of the wings, however, and most of the inner secondaries, are tinged with brownish rusty, the uppermost ones with a dull copper or greenish gloss.

“The female differs in smaller size, less brilliant color, absence generally of bristles on the breast and of spur, and a much smaller fleshy process above the base of the bill.”

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	47.00	63.50	20.50	15.00	6.75	1.05
Female . . .	37.00	53.00	16.50	12.50	5.25	.90

Iris brown; bill from base to front of nostrils dusky, rest pale horn color; legs purplish red; feet a shade darker, with bottoms dusky; claws pale horn color.

This noble bird, the pride of the forest, was formerly abundant throughout its range, but now extinct in the New England States and fast disappearing westward, though still quite abundant in portions of the Southern States and of the Indian Territory. I am quite familiar with the habits of this beautiful species, but feel that I cannot improve upon the minute and interesting description as given by Audubon, and therefore quote from the same.

“I shall describe the manners of this bird as observed in the countries where it is most abundant, and having resided for many years in Kentucky and Louisiana, may be understood as referring chiefly to them.

“The Turkey is irregularly migratory as well as irregularly gregarious. With reference to the first of these circumstances, I have to state, that whenever the mast of one portion of the country happens greatly to exceed that of another, the Turkeys are insensibly led towards the spot by gradually meeting in their haunts with more fruit the nearer they advance towards the spot where it is most plentiful. In this manner flock follows after flock, until one district is entirely deserted, while another is, as it were, overflowed by them. But, as these migrations

are irregular, and extend over a vast expanse of country, it is necessary that I should describe the manner in which they take place.

“About the beginning of October, when scarcely any of the seeds and fruits have yet fallen from the trees, these birds assemble in flocks, and gradually move towards the rich bottom lands of the Ohio and Mississippi. The males, or, as they are more commonly called, the gobblers, associate in parties of from ten to a hundred, and search for food apart from the females; while the latter are seen either advancing singly, each with its brood of young, then about two-thirds grown, or in connection with other families, forming parties often amounting to seventy or eighty individuals, all intent on shunning the old cocks, which, even when the young birds have attained this size, will fight with, and often destroy them by repeated blows on the head. Old and young, however, all move in the same course, and on foot, unless their progress is interrupted by a river, or the hunter’s dog forces them to take wing. When they come upon a river, they betake themselves to the highest eminences, and there often remain a whole day, or sometimes two, as if for the purpose of consultation. During this time the males are heard gobbling, calling and making much ado, and are seen strutting about, as if to raise their courage to a pitch befitting the emergency. Even the females and young assume something of the same pompous demeanor, spread out their tails, and run round each other, purring loudly, and performing extravagant leaps. At length, when the weather appears settled, and all around is quiet, the whole party mount to the tops of the highest trees, whence, at a signal, consisting of a single cluck, given by a leader, the flock takes flight for the opposite shore. The old and fat birds easily get over, even should the river be a mile in breadth; but the younger and less robust frequently fall into the water—not to be drowned, however, as might be imagined. They bring their wings close to their body, spread out their tail as a support, stretch forward their neck, and, striking out their legs with great vigor, proceed rapidly towards the shore; on approaching which, should they find it too steep for landing,

they cease their exertions for a few moments, float down the stream until they come to an accessible part, and by a violent effort generally extricate themselves from the water. It is remarkable that immediately after thus crossing a large stream, they ramble about for some time as if bewildered. In this state they fall an easy prey to the hunter.

“When the Turkeys arrive in parts where the mast is abundant, they separate into smaller flocks, composed of birds of all ages and both sexes, promiscuously mingled, and devour all before them. This happens about the middle of November. So gentle do they sometimes become after these long journeys, that they have been seen to approach the farm houses, associate with the domestic fowls, and enter the stables and corn cribs in quest of food. In this way, roaming about the forests, and feeding chiefly on mast, they pass the autumn and part of the winter.” [During the summer months the birds usually leave the timber lands in the morning, and wander far out upon the prairies, in search of grasshoppers, etc., returning at eve to their favorite roosting places in the branches of the tall trees, preferring those that overhang the streams.]

“As early as the middle of February, they begin to experience the impulses of propagation. The females separate and fly from the males. The latter strenuously pursue, and begin to gobble or to utter notes of exultation. The sexes roost apart, but at no great distance from each other. When a female utters a call note, all the gobblers within hearing return the sound, rolling note after note, with as much rapidity as if they intended to emit the last and the first together, not with spread tail, as when fluttering round the females on the ground, or practicing on the branches of the trees on which they have roosted for the night, but much in the manner of the domestic Turkey, when an unusual or unexpected noise elicits its singular hubbub. If the call of the female comes from the ground, all the males immediately fly towards the spot, and the moment they reach it, whether the hen be in sight or not, spread out and erect their tail, draw the head back on the shoulders, depress their wings with a quivering motion, and strut pompously about, emitting

at the same time a succession of puffs from the lungs, and stopping now and then to listen and to look. But whether they spy the female or not, they continue to puff and strut, moving with as much celerity as their ideas of ceremony seem to admit. While thus occupied the males often encounter each other, in which case desperate battles take place, ending in bloodshed, and often in the loss of many lives, the weaker falling under the repeated blows inflicted upon their heads by the stronger.

“I have been much diverted, while watching two males in fierce conflict, by seeing them move alternately backwards and forwards, as either had obtained a better hold, their wings drooping, their tails partly raised, their body feathers ruffled, and their heads covered with blood. If, as they thus struggle and gasp for breath, one of them should lose his hold, his chance is over, for the other, still holding fast, hits him violently with spurs and wings, and in a few minutes brings him to the ground. The moment he is dead, the conqueror treads him under foot, but, what is strange, not with hatred, but with all the motions he employs in caressing the female.

“When the male has discovered and made up to the female (whether such combat has previously taken place or not), if she be more than one year old she also struts and gobbles, turns round him as he continues strutting, suddenly opens her wings, throws herself towards him, as if to put a stop to his idle delays, lays herself down, and receives his dilatory caresses. If the cock meets a young hen, he alters his mode of procedure. He struts in a different manner, less pompously and more energetically, moves with rapidity, sometimes rises from the ground, taking a short flight around the hen, as in the manner of some Pigeons, the Red-breasted Thrush and many other birds, and on alighting runs with all his might, at the same time rubbing his tail and wings along the ground, for the space of perhaps ten yards. He then draws near the timorous female, allays her fears by purring, and, when she at length assents, caresses her.

“When a male and female have thus come together, I believe the connection continues for that season, although the former

by no means confines his attention to one female, as I have seen a cock caress several hens, when he happened to fall in with them in the same place, for the first time. After this the hens follow their favorite cock, roosting in his immediate neighborhood, if not on the same tree, until they begin to lay, when they separate themselves in order to save their eggs from the male, who would break them all for the purpose of protracting his sexual enjoyments. The females then carefully avoid him, except during a short period each day. After this the males become clumsy and slovenly, if one may say so, cease to fight with each other, give up gobbling or calling so frequently, and assume so careless a habit that the hens are obliged to make all the advances themselves. They yelp loudly and almost continually for the cocks, run up to them, caress them, and employ various means to rekindle their expiring ardour.

“Turkey cocks when at roost sometimes strut and gobble, but I have more generally seen them spread out and raise their tail, and emit the pulmonic puff, lowering their tail and other feathers immediately after. During clear nights, or when there is moonshine, they perform this action at intervals of a few minutes for hours together, without moving from the same spot, and indeed sometimes without rising on their legs, especially toward the end of the love season. The males now become greatly emaciated, and cease to gobble, their breast sponge becoming flat. They then separate from the hens, and one might suppose that they had entirely deserted their neighborhood. At such seasons I have found them lying by the side of a log, in some retired part of the dense woods and cane thickets, and often permitting one to approach within a few feet. They are then unable to fly, but run swiftly, and to a great distance. A slow turkey hound has led me miles before I could flush the same bird. Chases of this kind I did not undertake for the purpose of killing the bird, it being then unfit for eating, and covered with ticks, but with the view of rendering myself acquainted with its habits. They thus retire to recover flesh and strength, by purging with particular species of grasses, and using less exercise. As soon as their condition is improved,

the cocks come together again and recommence their rambles. Let us now return to the females.

“About the middle of April, when the season is dry, the hens begin to look out for a place in which to deposit their eggs. This place requires to be as much as possible concealed from the eye of the crow, as that bird often watches the Turkey when going to her nest, and, waiting in the neighborhood until she has left it, removes and eats the eggs. The nest, which consists of a few withered leaves, is placed on the ground, in a hollow scooped out, by the side of a log, or in the fallen top of a dry, leafy tree, under a thicket of sumach or briers, or a few feet within the edge of a canebrake, but always in a dry place. The eggs, which are of a dull cream color, sprinkled with red dots, sometimes amount to twenty, although the more usual number is from ten to fifteen. When depositing her eggs, the female always approaches the nest with extreme caution, scarcely ever taking the same course twice; and when about to leave them, covers them carefully with leaves, so that it is very difficult for a person who may have seen the bird to discover the nest.”

Their nests are placed on the ground, in dense thickets, often under an old log or tree top, in a place scratched out to fit the body, and lined loosely and sparingly with grasses, weeds and leaves. Eggs ten to fifteen, 2.50x1.85; buff white, speckled and spotted with rusty brown; in form, somewhat oval, but rather pointed at small end, and obtuse at the other.

ORDER COLUMBÆ.

PIGEONS.

“Bill straight, compressed, horny at the vaulted tip, which is separated by a constriction from the soft membranous basal portion. Nostrils beneath a soft, tumid valve. Tomia of the mandibles mutually apposed. Frontal feathers sweeping in strongly convex outline across base of upper mandible. Legs feathered to the tarsus or beyond. Hallux incumbent (with few exceptions), and

front toes rarely webbed at base. Tarsus with small scutella in front, or oftener reticulate, the envelope rather membranous than corneous. Head very small. Plumage without aftershafts. One pair of syringeal muscles. Sternum doubly notched or notched and fenestrate on each side. Carotids double. Palate schizognathous. Monogamous and highly altricial and ptilopædic."

FAMILY COLUMBIDÆ. PIGEONS.

"The basal portion of the bill covered by a soft skin, in which are situated the nostrils, overhung by an incumbent fleshy valve, the apical portion hard and convex. The hind toe on the same level with the rest; the anterior toes without membrane at the base. Tarsi more or less naked; covered laterally and behind with hexagonal scales."

GENUS **ECTOPISTES** SWAINSON.

"Head very small. Bill short, black; culmen one-third the rest of the head; feathers of the chin running very far forward; gonys very short. Tarsi very short, half covered anteriorly by feathers. Inner lateral claw much larger than outer, reaching to the base of the middle one. Tail very long and excessively cuneate; above as long as the wings. First primaries longest. Black spots on scapulars; a black and a rufous spot on inner webs of tail feathers."

Ectopistes migratorius (LINN.).

PASSENGER PIGEON.

PLATE XIV.

Irregular summer resident; rare; a few to my knowledge breed occasionally in the Neosho valley. Arrive early in March; begin laying by the middle of April.

B. 448. R. 459. C. 543. G. 215, 109. U. 315.

HABITAT. Eastern North America, from Hudson's Bay southward, and west to the Great Plains; casually westward to Nevada and Washington; Cuba.

SP. CHAR. "Tail with twelve feathers. Upper parts generally, including sides and body, head and neck, and the chin, blue. Beneath, purple brownish red, fading behind into a violet tint. Anal region and under tail coverts bluish white. Scapulars, inner tertials and middle of back with an olive brown tinge; the wing coverts, scapulars and inner tertials with large, oval spots of blue black on the inner webs, mostly concealed, except on the latter. Primaries blackish, with a border of pale bluish, tinged internally with red. Middle tail feathers brown; the rest pale blue on the outer web, white internally; each with a patch of reddish brown at the base of the inner web, followed by another of black. Sides and back of neck richly glossed with metallic golden violet or reddish purple. Tibia bluish violet. Bill black. Feet lake red. The female is smaller, much duller in color, more olivaceous above; beneath, pale ash instead of red, except a tinge on the neck; the jugulum tinged with olive, the throat whitish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	17.00	24.00	8.40	8.25	1.05	.65
Female . . .	16.00	23.00	8.00	8.00	1.05	.60

Iris red; bill and claws black; legs and feet lake red.

This species—commonly called the Wild Pigeon—so abundant formerly, is fast disappearing, though still to be found in numbers within the Indian Territory and portions of the Southern States. They are irregular wanderers, the gypsies among birds; their natural home, however, is within the wooded lands, and they are therefore seldom met with upon the broad prairies.

The following interesting description of these birds is from "North American Land Birds," Vol. III, p. 370:

"The Wild Pigeon appears to be almost entirely influenced in its migrations by the abundance of its food, excepting in those parts of the country in which it has not been known to remain during the winter. Even in these movements it is largely influenced by instinctive considerations of food. Evidently the temperature has but little to do with their migrations, as they not unfrequently move northward in large columns as early as the 7th of March, with a thermometer twenty degrees below the freezing point. In the spring of 1872 a large accumulation of these birds took place early in March, in the eastern portion of New York. They were present in the forests about Albany, and were taken in such immense numbers that the markets of New York and Boston were largely supplied with them.

"As early as the 10th of March they were ascertained to have in their ovaries full-grown eggs ready for exclusion. In Kentucky they have been known, according to Audubon, to remain summer and winter in the same district for several successive years, in consequence of great abundance of food, while in other parts of the State none were to be met with. They suddenly disappeared as soon as the beechmast had become exhausted, and did not return for a long period.

"The Wild Pigeons are capable of propelling themselves in long-continued flights, and are known to move with an almost incredible rapidity, passing over a great extent of country in a very short time. It is quite a common and well-ascertained

fact that Pigeons are captured in the State of New York with their crops still filled with the undigested grains of rice that must have been taken in the distant fields of Georgia or South Carolina, apparently proving that they must have passed over the intervening space within a very few hours. Audubon estimates the rapidity of their flight as at least a mile a minute.

“The Wild Pigeons are said to move, in their flight, by quickly-repeated flaps of the wings, which are brought more or less near to the body, according to the degree of velocity required. During the love season they often fly in a circling manner, supporting themselves with both wings angularly elevated. Before alighting they break the force of their flight by repeated flappings.

“Their great powers of flight, and the ability thus given to change at will their residence, and their means of renewing a supply of food, are also thought to be seconded by a remarkable power of vision, enabling them to discover their food with great readiness. Mr. Audubon states that he has observed flocks of these birds, in passing over a sterile part of the country, fly high in the air, with an extended front, enabling them to survey hundreds of acres at once. When the land is richly covered with food, or the trees well supplied with mast, they fly low in order to discover the part most plentifully supplied. . . .

“In its movements on the ground, as also when alighted on the branches of trees, the Wild Pigeon is remarkable for its ease and grace. It walks on the ground and also on the limbs of trees with an easy, graceful motion, frequently jerking its tail and moving its neck backward and forward.

“Mr. Audubon states that in Kentucky he has repeatedly visited one of the remarkable roosting-places to which these birds resort at night. This one was on the banks of Green River, and to this place the birds came every night at sunset, arriving from all directions, some of them from the distance of several hundred miles, as was conjectured from certain observations. The roost was in a portion of the forest where the trees were of great magnitude. It was more than forty miles in length, and averaged three in breadth. It had been occupied

as a roost about a fortnight when he visited it. Their dung was several inches deep on the ground. Many trees had been broken down by their weight, as well as many branches of the largest and tallest trees. The forest seemed as if it had been swept by a tornado. Everything gave evidence that the number of birds resorting to that part of the forest must be immense. A large number of persons collected before sunset to destroy them, provided with torches of pine knots, and armed with long poles and guns. The Pigeons began to collect after sunset, their approach preceded, even when they were at a distance, by a noise like that of a hard gale at sea sounding in the rigging of a vessel. As the birds passed over him, they created a strong current of air. The birds arrived by thousands, fires were alighted, and the work of destruction commenced. Many were knocked down by the pole men. In many cases they collected in such solid masses on the branches that several of their perches gave way and fell to the ground, in this way destroying hundreds of the birds beneath them. It was a scene of great confusion and continued until past midnight, the Pigeons still continuing to arrive. The sound made by the birds at the roost could be heard at the distance of three miles. As day approached, the noise in some measure subsided; and long before objects were distinguishable the Pigeons began to move off, and before daylight all that were able to fly had disappeared. The dead and wounded birds were then collected and piled into heaps by those who had assembled for the purpose.

“Though for the most part living, moving and feeding together in large companies, the Wild Pigeon mates in pairs for purposes of breeding. They have several broods in the season, and commence nesting very early in the spring, the time being considerably affected by the amount of food.”

Their nests are placed on trees, and in communities; a slight platform structure of twigs, without any material for lining whatever. Eggs two, 1.45x1.05; white; in form, varying from elliptical to oval.

GENUS **ZENAIDURA** BONAPARTE.

"Bill weak, black; culmen from frontal feathers about one-third the head above. Tarsus not quite as long as middle toe and claw, but considerably longer than the lateral ones; covered anteriorly by a single series of scutellæ. Inner lateral claw considerably longer than outer and reaching to the base of middle. Wings pointed; second quill longest; first and third nearly equal. Tail very long, equal to the wings; excessively graduated and cuneate, of fourteen feathers."

Zenaidura macroura (LINN.).

MOURNING DOVE.

PLATE XIV.

Summer resident; abundant; an occasional winter sojourner in the southern part of the State. Begin laying the last of April.

B. 451. R. 460. C. 544. G. 216, 110. U. 316.

HABITAT. The whole of temperate North America, north to the British possessions, south to the West Indies and Panama.

SP. CHAR. "Tail feathers fourteen. Above, bluish, although this is overlaid with brownish olive, leaving the blue pure only on top of the head, the exterior of the wings and the upper surface of the tail, which is even slightly tinged with this color. The entire head, except the vertex, the sides of the neck, and the under parts generally, light brownish vinaceous, strongly tinged with purple on the breast, becoming lighter behind and passing into brownish yellow or creamy ochraceous on the anal region, tibiae and under tail coverts. Sides of the neck with a patch of metallic purplish red. Sides of body and insides of wings clear light blue. Wing coverts and scapulars spotted with black (mostly concealed), and a small oblong patch of the same, with a steel-blue reflection, below the ear. Tail feathers seen from below blackish, the outer web of outermost white, the others tipped with the same, the color becoming more and more bluish to the innermost, which is brown. Seen from above, there is the same gradation from white to light blue in the tips; the rest of the feather, however, is blue, with a bar of black anterior to the light tip, which runs a little forward along the margin and shaft of the feather. In the sixth feather the color is uniform bluish, with this bar; the seventh is without a bar. Bill black, the angle of the mouth carmine. *Female:* Smaller, and with less red beneath. Bare orbits pale blue, with a green tint; iris dark brown; feet lake red. *Young:* With the feathers of the upper parts and jugulum margined with paler; the tints more brownish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	12.50	18.00	5.90	5.75	.85	.60
Female . . .	11.00	17.50	5.75	4.25	.80	.55

Iris dark brown; bill black; legs and feet lake red; claws horn blue.

This familiar bird is extensively distributed throughout the United States, from southern New England and Washington

southward; breeding throughout its range. It adapts itself readily to its surroundings, and is as much at home on the dry plains as in the clearings of the moist woodlands. Its plumage does not appear to be affected by the climate. I have specimens in the "Goss Ornithological Collection" shot at Neah Bay, Washington, San Pedro, Martir Isle, Gulf of California, and in Kansas, and have shot the birds in New England, and in southern Central America, and so far fail to find any difference in coloration that will hold good.

Its food consists of insects, berries and grains, the latter gleaned chiefly from the fields. It is a harmless bird, that by its innocent ways readily wins the heart and protection of man. Its flight is vigorous and strong, and the rapid strokes of its wings cause a whistling sound. During the pairing season the male often circles and sails above his mate, with tail expanded, and upon the ground struts about with nodding head, and feathers spread in a graceful manner. His mournful cooing love note, so pleasing to the female, wafts to my ears one of the saddest sounds in nature. The birds while mated are true and devoted to each other. At the close of the breeding season they collect together in small flocks, usually family groups.

Their nests are placed on the forks of low, horizontal branches of trees, on grape vines, and upon the ground; when built off the ground, a loose, slight platform, constructed of twigs, a few stems of grass, and leaves. Eggs two, 1.12x.85; white; in form, elliptical to oval.

ORDER RAPTORES.

BIRDS OF PREY.

"Bill usually powerful, adapted for tearing flesh, strongly decurved and hooked at the end, furnished with a cere in which the nostrils open. Feet strongly flexible, with large, sharp and much-curved claws, gradually narrowed from base to tip, convex on the sides, that of the second toe larger than that of the fourth toe, and the hinder not smaller than the second one. Feet never permanently zygodactyle, though fourth toe often versatile; anterior toes com-

monly with one basal web; hallux considerable and completely incumbent (except *Cathartidæ*). Legs feathered to the suffrago or beyond. Rectrices twelve (with rare exceptions). Primaries sinuate or emarginate (with rare exceptions). Sternum singly or doubly notched or fenestrate. Palate desmognathous, Carotids double. Syrinx wanting, or developed with only one pair of muscles. Altricial; the young being weak and helpless, yet ptilopædic, being down at birth."

SUBORDER SARCORHAMPHI. AMERICAN VULTURES.

Head entirely naked, or else only partially covered with down (in young); nostrils longitudinal; a distinct web between inner and middle toes, at base; hind toe short, elevated, the feet wholly unfit for grasping. (*Ridgway*.)

FAMILY CATHARTIDÆ. AMERICAN VULTURES.

"Whole head, and sometimes the neck, naked; eyes prominent, and not shaded by a superciliary shield. Cere much elongated, much depressed anteriorly below the very arched culmen; nostrils longitudinal, horizontal, the two confluent or perforated. Middle toe very long, and hind one much abbreviated. A web between the base of the inner and middle toes."

GENUS CATHARTES ILLIGER.

"Size medium, the wings and tail well developed, the remiges very long and large. Head and upper portion of the neck naked; the skin smooth, or merely wrinkled; a semicircular patch of antrorse bristles before the eye. Nostril very large, with both ends broadly rounded, occupying the whole of the nasal orifice. Cere contracted anteriorly, and as deep as broad; lower mandible not so deep as the upper. Plumage beginning gradually on the neck, with broad, rounded, normal feathers. Ends of primaries reaching beyond the end of the tail; third or fourth quill longest; outer five with inner webs appreciably sinuated. Tail much rounded; middle toe slightly longer than tarsus. Sexes alike."

Cathartes aura (LINN.).

TURKEY VULTURE.

PLATE XIV.

Summer resident; abundant; occasionally seen in winter. Begin laying the last of April.

B. 1. R. 454. C. 537. G. 213, 111. U. 335.

HABITAT. Nearly the whole of temperate and tropical America, from New England, Manitoba, British Columbia and Washington southward, including the West Indies, to Falkland Islands and Patagonia.

SP. CHAR. *Adult*: Neck and lower parts uniform dull black; upper parts blackish, with a greenish and violet gloss, the feathers of the back, the scapulars and wing coverts with margins broadly (but not abruptly) light grayish brown; edge of secondaries light grayish brown, varying to light ash; shafts of quills

and tail feathers pale brown, varying to yellowish white; bill chalk white; iris grayish brown; naked skin of head and upper neck (in life) dull livid crimson, brightening to lake red on cere, the lores and top of head sometimes with whitish, wart-like papillæ. *Young*: Similar to adult, but bill blackish, and naked skin of head and neck livid dusky, and the brownish margins to wing coverts, etc., less distinct. *Downy young*: Covered with pure-white cottony down, the head, however, naked, and sallow dusky. (*Ridgway*.)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	27.50	70.00	22.00	11.50	2.30	1.00
Female . . .	27.00	68.00	21.00	11.25	2.30	1.00

A young female, in the "Goss Ornithological Collection," reared in confinement and killed December 10th, measures: 26.25, 66.50, 20.00, 10.50, 2.25, .90.

This Vulture is one of the greatest scavengers of nature. A very abundant bird, especially in the warmer climates, where its presence is of incalculable value as a gormandizer of the garbage, filth and carrion that taint the air and breed disease. Were it not for their valuable services, it would be hard to tolerate their disgusting, filthy habits and ungainly ways upon the ground and perch. In the air, however, as it sails and circles high above us, with scarcely an apparent effort, we are forced to admit that it is a magnificent sight, and to inwardly say, "Long live the purifiers of the air." I have raised the young (downy little fellows) from the nest, feeding them wholly upon fresh meat, and find that the rank odor of the body is not produced by the food it eats, but from natural causes, like the smell or musk of many animals.

These birds are mute, their only noise a hiss, like the sound from hot iron being dropped into water. Cowardly birds, that make no defense at their capture, but will occasionally, when approached, raise their feathers, stamp their feet like sheep, and hiss.

Their nests are placed on rocky ledges and in hollow trees and stumps. Eggs two, laid on the bare rocks or debris; no lining; 2.70x1.90; grayish white, variously and unevenly blotched and splashed with light to dark reddish brown and purplish drab; in form, rounded oval.

GENUS **CATHARISTA** VIEILLOT.

"Size of *Cathartes*, but more robust, with shorter wings and very different flight. Wings with the remiges abbreviated, the primaries scarcely reaching to the middle of the tail. Tail even, or faintly emarginated. Head and upper portion of neck naked, the feathers extending farther up behind than in front; naked skin of the side of the neck transversely corrugated; no bristles before the eye. Nostrils narrow, occupying only about the posterior half of the nasal orifice, its anterior end contracted and acute. Cere not contracted anteriorly, but the upper and lower outline parallel; much depressed, or broader than deep. Plumage beginning gradually on the neck with normal or broad and rounded feathers. Fourth or fifth quill longest; outer five with inner webs sinuated. Tarsus longer than middle toe."

Catharista atrata (BART.).**BLACK VULTURE.**

PLATE XIV.

Summer resident; rare. Dr. George Lisle, of Chetopa, (a close observer,) wrote me, in the spring of 1883, that the birds were quite common and breeding there fifteen or twenty years ago, but now quite scarce; that he saw three of the birds in the fall of 1882 at a slaughter pen, with Turkey Buzzards; that in 1858 he found a nest with two eggs in an old, hollow, broken stump. And Dr. Lewis Watson reports the capture of one at Ellis, March 27th, 1885.

B. 3. R. 455. C. 538. G. 214, 112. U. 326.

HABITAT. The whole of tropical, and warmer temperate, America; north to North Carolina and the lower Mississippi valley; casually to Maine, New York, Illinois, Dakota, etc.; south to Chili and the Argentine Republic. (Apparently wanting in California and western Mexico.)

SP. CHAR. "Form heavy; the wings and tail short, the latter square; the remiges and rectrices very hard and stiff. Bill strong, the mandibles broader than deep, and of about equal depth, the terminal hook well developed; upper and lower outlines of the cere parallel and nearly straight. Nostril narrow, its anterior end contracted and pointed. *Adult*: Bill blackish, the point horny white; naked skin of the head and upper part of the neck blackish. Entire plumage continuous, perfectly uniform dull black; primaries becoming grayish basally (more hoary whitish on their under surface), their shafts pure white for their whole length."

Measurements of a pair of birds in the "Goss Ornithological Collection:"

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	26.50	59.00	17.20	8.50	3.10	.95
Female	26.00	58.50	17.00	8.00	3.10	.90

Iris light reddish brown; bill pale olive blue, tips whitish; cere and claws black; legs and feet grayish blue.

This species has a much less extended distribution than the Turkey Vultures, but it largely outnumbers them in the tropical regions, its natural habitat; although quite a hardy bird, as it occasionally winters in the southern part of the Indian Territory. I have a pair in the "Goss Ornithological Collection," shot in February, at Limestone Gap, Choctaw Nation, where they have bred in the crevices of the rocks for years. These birds are also much stouter built, and, if possible, more awkward upon the ground, from which they heavily rise, in a running, leaping manner; and in flight more laborious, flapping and sailing as they go. They are occasionally known to kill young pigs and chickens, but their value as scavengers saves them. About the cities they become as tame as our domestic fowls, feeding with the same and perching and roosting upon the housetops; and I have seen them following and riding upon carts loaded with offal, and fearlessly feeding from the dump, or a carcass, with mongrel curs that, strange to say, never harm them.

Their nests are placed on the ground, and in old, hollow logs and crevices of rocks. Begin laying about the middle of April. Eggs two, laid on the bare ground and rotten wood, no material of any kind used for lining; 3.00x2.00; dull yellowish to bluish white, spotted and blotched irregularly, in some cases sparingly, on others thickly, with umber to dark reddish brown; in form, rounded oval.

SUBORDER FALCONES. VULTURES, FALCONS, HAWKS, BUZZARDS, EAGLES, HARRIERS, KITES, ETC.

Head entirely feathered, or only partially naked; nostrils vertical or roundish; no web between inner and middle toes; hind toe well developed, with large, sharp claws, inserted at the same level with anterior toes, the feet especially adapted for grasping. (*Ridgway*.)

Eyes lateral, not surrounded by disks of radiating feathers; cere exposed; outer toe not reversible (except in *Pandion*). (*Ridgway*.)

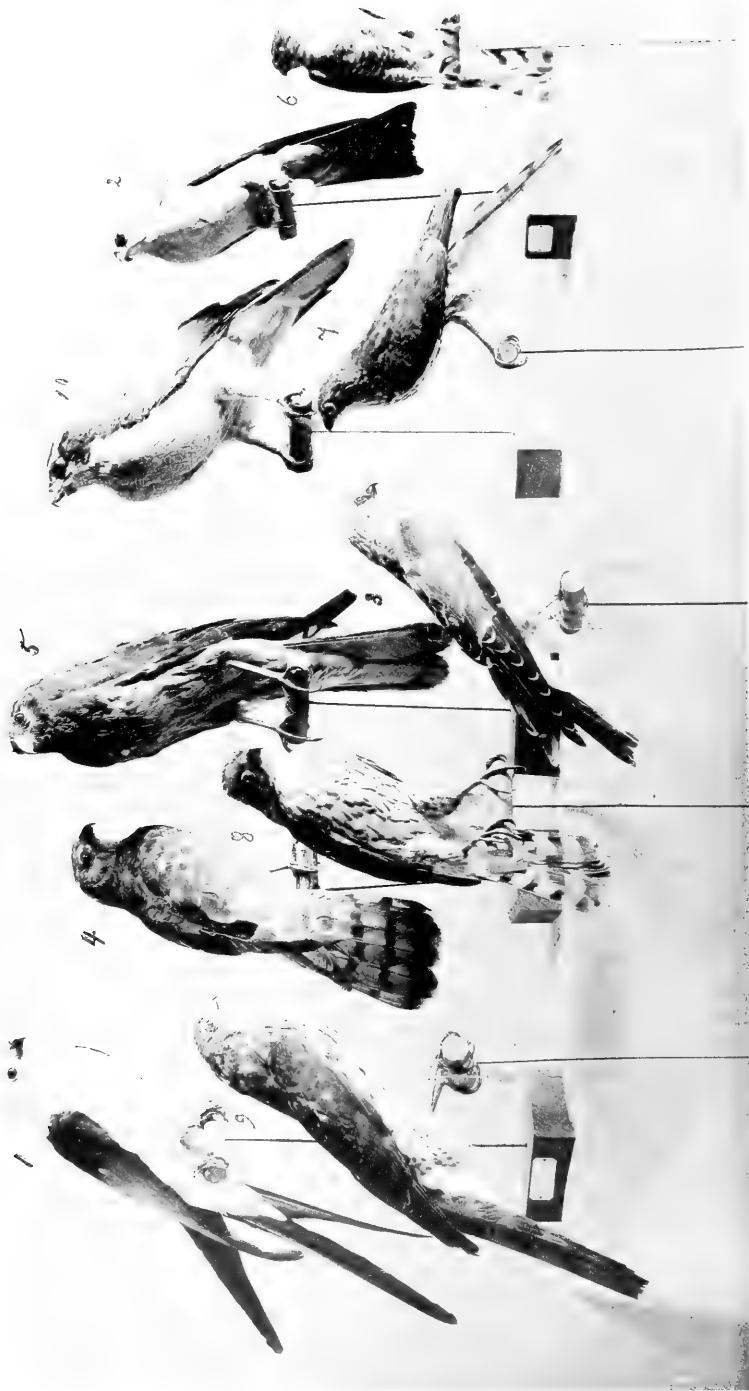


PLATE XV.

1. SWALLOW-TAILED KITE; Female. 2. MISSISSIPPI KITE; Male. 3. JUV. MALE. 4. MARSH HAWK; Male. 5. Female. 6. SHARP-SHINNED HAWK; Male. 7. Female. 8. COOPER'S HAWK; Male. 9. Female. 10. AMERICAN GOSHAWK; Male.

FAMILY **FALCONIDÆ**. VULTURES, FALCONS, HAWKS,
EAGLES, ETC.

"Eyes directed laterally, and eyelids provided with lashes. Toes invariably naked, and tarsus usually naked and scutellate (feathered only in *Aquila* and *Archibuteo*). Outer toe not reversible (except in *Pandion*). Head never with ear tufts and never wholly naked (except in the *Vulturinae* of the old world)."

SUBFAMILY **ACCIPITRINÆ**. KITES, BUZZARDS, HAWKS, GOSHAWKS, EAGLES, ETC.

Outer toe not reversible; claws graduated in size from the largest (that of hind toe) to the smallest (that of outer toe), broader and (except in *Elanus*) grooved on under side. (*Ridgway*.)

Nostril not circular, nor linear and oblique, with the upper end the posterior one, nor with central bony tubercle. (*Ridgway*.)

GENUS **ELANOIDES**. VIEILLOT.

"Form swallow-like, the tail excessively lengthened and forked, and the wings extremely long. Bill rather small and narrow; commissure faintly sinuated; upper outline of the lower mandible very convex, the depth of the mandible at the base being about half that through the middle; gonys drooping terminally, nearly straight. Side of the head densely feathered close up to the eyelids. Nostril ovoid, obliquely vertical. Feet small but robust; tarsus about equal to middle toe, covered with large, very irregular scales; toes with transverse scutellæ to their base; claws short but strongly curved; grooved beneath, their edges sharp. Second or third quill longest; first shorter than, equal to or longer than the fourth; two outer primaries with inner webs sinuated. Tail with the outer pair of feathers more than twice as long as the middle pair."

Elanoides forficatus (LINN.).

SWALLOW-TAILED KITE.

PLATE XV.

Irregular summer resident in the eastern part of the State; some seasons common, others rare. Arrive the first of May; begin laying the last of May. A few remain until late in the fall.

B. 34. R. 426. C. 493. G. 197, 113. U. 327.

HABITAT. Tropical and warm temperate America; north to Wisconsin, Minnesota, Dakota. (Western Manitoba. *Seton*.) Casually to Pennsylvania and southern New England; accidental in England.

SP. CHAR. "*Adult, male and female*: Whole head and neck, lining of wings, broad band across the rump and entire lower parts pure white; interscapulars and lesser wing coverts rich, dark, soft, bronzed purplish black; rest of upper parts, including lower part of rump, upper tail coverts and tail more metallic

slaty black; feathers somewhat greenish basally, more bluish terminally, with a peculiar soft, milky appearance, and with very smooth, compact surface; tertials almost entirely white, black only at tips; white on under side of wing occupying all the coverts and the basal half of the secondaries. *Younger*: Similar, but with the beautiful soft, purplish bronze black of shoulders and back less conspicuously different from the more metallic tints of the upper parts. *Young*: The black above less slaty, with a brownish cast, and with a quite decided gloss of bottle green; secondaries, primary coverts, primaries and tail feathers finely margined terminally with white; feathers of the head and neck with fine shaft lines of black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	22.75	47.75	15.25	13.00	1.25	.75	.32
Female	23.50	51.00	16.50	13.75	1.25	.80	.32

Iris black; bill bluish black, paler at base; cere and edges of eyelids light blue; legs and feet pale blue, with a greenish tinge; claws bluish flesh color.

I have met with this elegant bird in various localities within its range, usually in small flocks, seldom in abundance—a graceful picture of ease and motion in the air, but almost helpless upon the ground, their legs being too short for locomotion; their feet, however, are well adapted for grasping and perching. Their food consists chiefly of grasshoppers, beetles, lizards and snakes, which they catch with ease, with their claws, while on the wing, and devour as they sail along. On the arrival of the birds upon the breeding grounds, they devote several days to courtship and mating, and in selecting a place for their nests. The males assist in building the nest, alternate in sitting and in feeding the young, and, in fact, appear as attentive as the females.*

April 27th, 1876 (the earliest arrival noticed), a pair put in an appearance at Neosho Falls, and as they continued to circle in their graceful flights over the same grounds—the edge of the prairie and timber on the Neosho River—I became satisfied that their nesting place would be selected within the circle, and I devoted my leisure moments to watching their movements. On the 5th of May they were joined by another pair, and later in the day, to my great surprise and joy, two pairs of Missis-

* I once saw a pair of these birds in the act of copulation. They were sitting on a small, horizontal limb, close together and facing each other, when, quick as a flash, the female turned or backed under the limb, the male meeting her from the top.

sippi Kites appeared and also joined in the circling flights. It was a beautiful and, to me, exciting sight to watch their various motions and coquetting evolutions, sailing high in the air, swooping down with partially-closed wings, skimming along the prairie, lost for a moment in the woods, ascending in spiral flights, gliding from slow to swift and swift to slow, without a flit or break, like Swallows. For grace and symmetry of action I would rank them first among the aerial birds, attaching the blue ribbon to the Swallow-tailed. Unfortunately, I was called away on the 8th, and did not return until the 18th. At first I thought the birds had left, but I soon occasionally noticed one here and there flying low down and often disappearing in the tree tops. I lost no time, but hastened, with glass and gun in hand, for the timber embraced in their former flights, and in a short time had the pleasure of finding a pair of the Swallow-tailed Kites building a nest in the top of a large hickory tree, the nest being about two-thirds completed; by cautiously approaching and lying down behind a fallen tree, I was enabled to watch them unobserved, and, with the aid of the glass, to plainly see them at their work. When either came to the nest alone with a stick, it would place it hurriedly upon the nest, but when both met at the nest they would at once commence fussing about, pulling at the sticks and trying to arrange the material, first one getting upon the nest and then the other, turning around as if trying to fit a place for the bodies. I think at one time they must have worked at least ten minutes trying to weave in or place in a satisfactory manner a stripping from the inner bark of the cottonwood. As builders they are not a success.

Their nests are placed in the small branches near the tops of tall trees, composed of sticks loosely interwoven, and lined sparingly with the soft, ribbon-like strippings from the inner bark of decaying or dead cottonwood trees. Eggs usually two (I have never found more; according to Audubon, four to six; and Capt. Chas. Bendire reports the finding of four in a nest), 1.87x1.50; cream white, irregularly spotted and blotched with dark reddish brown, running often largely together towards small end; in form, rather oval.

GENUS **ICTINIA** VIEILLLOT.

"Form Falcon-like; the neck short, wings long and pointed, the primaries and rectrices strong and stiff, and the organization robust. Bill short and deep, the commissure irregularly toothed and notched; gonys very convex, ascending terminally; cere narrow; nostril very small, nearly circular; feet small but robust; tarsus about equal to middle toe, with a distinct frontal series of broad transverse scutellæ; claws rather short, but strongly curved, slightly grooved beneath, their edges sharp. Third quill longest; first of variable proportion with the rest. Tail moderate, the feathers wide, broader terminally, and emarginated."

Ictinia mississippiensis (WILS.).

MISSISSIPPI KITE.

PLATE XV.

Summer resident; quite common on the Medicine River and its tributaries; rare in other portions of the State. Arrive by the first of May; begin laying the last of May.

B. 36. R. 428. C. 491. G. 198, 114. U. 329.

HABITAT. Southern United States, east of the Rocky Mountains; north to South Carolina, southern Illinois, Kansas, etc.; casually to Pennsylvania, Wisconsin and Iowa; south through eastern Mexico to Guatemala.

SP. CHAR. "*Adult male:* Head, neck, secondaries and entire lower parts plumbeous ash, becoming, by a gradual transition, lighter on the head and secondaries, where the shade is pale cinereous, the head anteriorly, and the tips of the secondaries, being silver white. Lores and eyelids black. Rest of the plumage dark plumbeous, approaching plumbeous black on the lesser wing coverts, primaries and upper tail coverts, the tail being nearly pure black. Primaries with an indistinct narrow concealed stripe of chestnut rufous on the outer webs, and larger spots of the same on the inner webs; feathers of the head, neck and lower parts abruptly pure white beneath the surface, this showing in partially exposed spots on the pectoral region and crissum. Scapulars also with large concealed white spots. Shafts of primaries and tail feathers black on both sides. *Adult female:* Similar to the male, but head and secondaries decidedly darker, hardly approaching light ash; scarcely any trace of rufous on the primaries, none at all on outer webs; shafts of tail feathers white on under side. Bill, cere, eyelids and interior of mouth deep black; iris deep lake red; rictus orange red; tarsi and toes pinkish orange red; lower part of tarsus and large scutellæ of toes dusky. *Immature male, transition plumage:* Similar to the adult female, but the white spots on basal portion of pectoral and crissal feathers distinctly exposed; secondaries not lighter than the rest of the wing. Tail feathers with angular white spots extending quite across the inner webs, producing three distinct transverse bands when viewed from below. Inner web of outer primary mostly white anterior to the emargination. Color of bill, etc., as in the adult, but interior of mouth whitish, and the iris less pure carmine. *Young female, first plumage:* Head, neck and lower parts white,

with a yellowish tinge; this most perceptible on the tibiae. Each feather with a medial longitudinal ovate spot of blackish brown, more reddish on the lower parts. The chin, throat, and a broad superciliary stripe, are immaculate white. Lower tail coverts each with a medial acuminate spot of rusty, the shafts black. Upper parts brownish black; wing coverts, scapulars and interscapulars, feathers of the rump, and the upper tail coverts, narrowly bordered with ochraceous white, and with concealed quadrate spots of the same; primary coverts, secondaries and primaries sharply bordered terminally with pure white. Tail black (faintly whitish at the tip), with three (exposed) obscure bands of a more slaty tint; this changing to white on the inner webs, in the form of angular spots forming the bands. Lining of the wing pale ochraceous, transversely spotted with rusty rufous; under primary coverts with transverse spots of white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	14.25	35.75	11.50	6.60	1.35	.65	.25
Female . . .	14.50	36.25	11.75	6.85	1.35	.66	.25

Iris lake red; bill, cere and claws black; legs red; upper parts of feet brownish red, bottoms yellowish. *Young:* Iris brownish red; legs and feet brownish.

This species is common in portions of the lower Mississippi valley, westward into Texas and the Indian Territory. The birds inhabit the timber skirting the streams upon our prairies. Their motions in the air are graceful and easy, sailing and circling for hours, in search of grasshoppers and other insects, and I have seen them swoop down, and, with their claws, snatch lizards from the ground, rocks and old logs, sometimes stopping to eat them, but, as a rule, feeding on the wing. I never saw them chase or disturb other birds, and, upon dissection, have failed to find a feather. The birds do not appear to fear them in the least, many nesting upon their breeding grounds.

Their nests are placed in the forks from the main body of the trees, or in the forks of the larger limbs. They range in height from twenty-five to fifty feet from the ground, and are built of sticks, and lined with leaves and green twigs in leaf. Without the green twigs they would be taken for the nests of the common Crow. In the spring of 1887, I collected, on the Medicine River, in Barber county, Kansas, seven sets of eggs (two a full set), that measure as follows: 1st, 1.55x1.33, 1.52x1.36; 2d, 1.76x1.48, 1.65x1.35; 3d, 1.70x1.39, 1.56x1.35; 4th, 1.70x1.37, 1.68x1.30; 5th, 1.75x1.30; 6th, 1.54x1.31, 1.45x1.24;

7th, 1.70x1.38, 1.68x1.43; in color white, or rather bluish white, without markings or shell stains; in form, roundish.

GENUS **CIRCUS** LACEPEDE.

"Form very slender, the wings and tail very long, the head small, bill weak, and feet slender. Face surrounded by a ruff of stiff, compact feathers, as in the Owls (nearly obsolete in some species). Bill weak, much compressed; the upper outline of the cere greatly ascending basally, and arched posteriorly, the commissure with a faint lobe; nostril oval, horizontal. Loral bristles fine and elongated, curving upwards, their ends reaching above the top of the cere. Superciliary shield small, but prominent. Tarsus more than twice the middle toe, slender, and with perfect frontal and posterior continuous series of regular transverse scutellæ; toes slender, the outer longer than the inner, claws strongly curved, very acute. Wings very long, the third or fourth quills longest; first shorter than the sixth; outer three to five with inner webs sinuated. Tail very long, about two-thirds the wing, rounded."

Circus hudsonius (LINN.).

MARSH HAWK.

PLATE XV.

Resident; abundant. Begin laying about the first of May.

B. 38. R. 430. C. 489. G. 199, 115. U. 331.

HABITAT. The whole of North America; south in winter to Panama, Bahamas and Cuba.

SP. CHAR. *Adult male*: Head, neck, chest and upper parts uniform light bluish gray, the occiput darker and streaked with whitish, tinged with rusty; longer quills blackish toward the tips; upper tail coverts plain white; tail bluish gray, mottled with white toward base, narrowly tipped with white, crossed near end by a broad blackish band, and, anterior to this, by five to seven narrower and less distinct dusky bands; the inner webs whitish, with the bands more distinct, and sometimes tinged with rusty; under surface of wing (except terminal third or more of quills), and lower parts from breast backward, white, the larger under wing coverts and lower parts with more or less numerous transverse (usually cordate) spots of rusty or brown. *Adult female*: Above, dusky brown, the head and neck streaked, the lesser wing coverts spotted, and feathers of rump edged, with rusty; upper tail coverts plain white; tail brown, paler at tip, and crossed by six or seven very regular and distinct bands of blackish; the brownish spaces becoming gradually paler and more rusty to outer feathers, which are more ochraceous; sides of head light dull buffy, with a dusky stripe behind eye; feathers of 'facial disk' buff, each with a median streak of brown; chin, throat, and lower parts generally, dull buffy whitish, varying to deeper dull buffy, striped (except on chin and throat) with brown, the stripes becoming gradually much narrower posteriorly. *Young*: Above, blackish brown, the head and neck streaked and lesser wing coverts spotted with deep rusty; upper tail coverts white, tinged more or less with ochraceous; tail crossed by four broad bands of black, the interspaces being dark brown on middle feathers,

changing gradually to ochraceous on outer feathers; ear coverts uniform rich dark brown; feathers of 'facial disk' dark brown, broadly edged with rufous; lower parts rich rusty ochraceous, growing gradually paler posteriorly, the breast and sides narrowly and (usually) indistinctly streaked with darker, but elsewhere immaculate. *Downy young:* Entirely pale cinnamon buffy, tinged with grayish on back, and becoming almost white on lower parts. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	18.00	41.50	13.25	8.90	2.90	.65	.80
Female . . .	21.00	45.50	15.00	10.25	3.00	.70	.30

Iris brown; bill horn blue, light at base; cere greenish yellow; legs and feet yellow; claws black.

This widely-distributed species (a sort of connecting link between the Hawks and Owls) has been found breeding as far north as Hudson's Bay and Alaska, and they no doubt occasionally breed northward within their range. I have found them breeding in Lower California, but south of the United States and northern Mexico they are not common, and as a rule only winter sojourners. The birds frequent the low lands and marshes, not from choice, I imagine, but because the food they seek is the most abundant there; for they appear alike at home upon the plains, in localities where the lizards and small rodents abound.

Its flight is low and not swift, but very light and buoyant, flapping and sailing as it courses over the ground, often hovering with vibrating wings as it catches sight of some unlucky rodent, lizard, frog or bird in the grass beneath; never giving chase, but dropping upon its prey, and eating it where caught, unless in a very exposed situation, when it flies to a more secluded place upon the ground. The birds often alight upon a fence post, but seldom in trees, but I never saw one attempt to feed upon its prey from a perch. In food habits they are not particular; a sort of scavenger, that readily feeds upon the carcass of a bird or fish—in fact, nothing seems to come amiss.

These birds as a whole are very beneficial, though occasionally killing a stray chicken, but seldom venturing within the door yard; and they have not the courage to tackle a full grown fowl—at least I have never known them to do so, and I have often seen a hen drive them away from her chicks.

Their nests are placed on the ground, in the grass, sometimes under low bushes, and usually on the bottom prairie lands; a slight structure, made usually of grasses; sometimes, on boggy grounds, with a foundation of sticks and weeds. Eggs four to six, 1.86x1.42; bluish white, generally unspotted, but occasionally with faint to distinct spots and blotches of purplish brown; in form, broadly oval.

GENUS **ACCIPITER** BRISSON.

Face not encircled by a ruff. Tail decidedly more than two-thirds as long as wing. Depth of bill at base not decidedly less than chord of culmen; middle toe equal to or longer than naked portion of tarsus in front; lores densely feathered. (*Ridgway*.)

SUBGENUS **ACCIPITER**.

Bare portion of tarsus in front longer than middle toe; wing less than 12.00. (*Ridgway*.)

Accipiter velox (WILS.).

SHARP-SHINNED HAWK.

PLATE XV.

Winter sojourner; rare; in migration, common. Probably occasionally breed in the State.

B. 17. R. 432. C. 494. G. 201. 116. U. 332.

HABITAT. Nearly the whole of North America; south in winter to Costa Rica. The birds have been found breeding as far south as Florida and southern Texas, but they breed chiefly in the northern United States and northward.

SP. CHAR. "*Adult male*: Above, deep plumbeous, this covering head above, nape, back, scapulars, wings, rump and upper tail coverts; uniform throughout, scarcely perceptibly darker anteriorly. Primaries and tail somewhat lighter and more brownish. The latter crossed by four sharply-defined bands of brownish black, the last of which is subterminal, and broader than the rest, the first concealed by the upper coverts; tip passing very narrowly (or scarcely perceptibly) into whitish terminally. Occipital feathers snowy white beneath the surface; entirely concealed, however. Scapulars also with concealed, very large, roundish spots of pure white. Under side of primaries pale slate, becoming white toward bases, crossed by quadrate spots of blackish, of which there are seven (besides the terminal dark space) on the longest. Lores, cheeks, ear coverts, chin, throat, and lower parts in general, pure white; chin, throat and cheeks with fine, rather sparse, blackish shaft streaks; ear coverts with a pale rufous wash. Jugulum, breast, abdomen, sides, flanks and tibiæ with numerous transverse broad bars of delicate vinaceous rufous, the bars medially somewhat transversely cordate, and rather narrower than the white bars; laterally the pinkish rufous prevails, the bars being connected broadly along the shafts; tibiæ

with rufous bars much exceeding the white ones in width; the whole maculate region with the shaft of each feather finely blackish. Anal region scarcely varied; lower tail coverts immaculate pure white. Lining of the wing white, with rather sparse cordate, or cuneate, small blackish spots; axillars barred about equally with pinkish rufous and white. Fifth quill longest; fourth but little shorter; third equal to sixth; second slightly shorter than seventh. Tail perfectly square. *Adult female*: Scarcely different from male. Above, rather pale slaty; the darker shaft streaks rather more distinct than in the male, although they are not conspicuous. Beneath with the rufous bars rather broader, the dark shaft streaks less distinct; tibiae about equally barred with pinkish rufous and white. Fourth and fifth quills equal and longest; third equal to sixth; second equal to seventh; first three inches shorter than longest. *Young male*: Above, umber brown; feathers of the head above edged laterally with dull light ferruginous; those of the back, rump, the upper tail coverts, scapulars and wing coverts bordered with the same; scapulars and rump showing large, partially exposed, roundish spots of pure white. Tail as in adult. Sides of the head and neck strongly streaked, a broad lighter supraloral stripe apparent. Beneath white, with a slight ochraceous tinge; cheeks, throat and jugulum with fine narrow streaks of dusky brown; breast, sides and abdomen with broader longitudinal stripes of clear umber (less slaty than the back), each with a darker shaft line; on the flanks the stripes are more oval; tibiae more dingy, markings fainter and somewhat transverse; anal region and lower tail coverts immaculate white. *Young female*: Similar in general appearance to the young male. Markings beneath broader, and slightly sagittate in form, becoming more transverse on the flanks; paler and more reddish than in the young male; tibiae with brownish rufous prevailing, this in form of broad transverse spots."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	11.00	22.00	6.75	5.50	1.90	.40	.25
Female . . .	13.50	25.50	8.50	6.75	2.00	.45	.25

Iris yellow; bill horn blue; cere greenish yellow; legs and feet yellow; claws black.

This spirited little Hawk is one of the best known, and one of the most destructive birds of the family. On the wing, in the chase, it is swift as an arrow, and strikes its prey readily in the air, upon the ground, or the perch, often dashing into a thicket and capturing little birds in their supposed safe retreats. They are especially destructive to the sparrows that gather late in the fall and winter in flocks about the thickets and hedges, apparently killing not only to satisfy hunger, but for pure "cussedness." The little fellows are as brave as they are dashing, often striking and killing birds much larger than themselves. They also feed upon mice and other small quadrupeds, lizards and insects; but the killing of small birds appears to be their

chief delight. I admire their courage and dash, but cannot find it in my heart to say one word in their favor.

Their nests are occasionally placed on rocky cliffs, but usually in trees, often in the tops of the tallest. At Digby, Nova Scotia, I found a pair nesting in a hemlock at least eighty feet from the ground. Their nests are composed of sticks and twigs, and lined with a few dry leaves, strips of bark and grasses. Eggs usually three or four. They vary in form and size. A set of four eggs, collected at Kingston, Mass., June 3d, 1875, from a nest in a cedar, thirty feet from the ground, measure: 1.39×1.13 , 1.42×1.15 , 1.38×1.14 , 1.37×1.17 . The ground color varies from a pale greenish to a bluish white, beautifully marked with spots and confluent blotches of varying shades of umber to dark brown; in form, rather roundish.

Accipiter cooperi (Bonap.).

COOPER'S HAWK.

PLATE XV.

Resident; common in summer. Begin laying early in May.

B. 15. 16. R. 431. C. 495. G. 200, 117. U. 333.

HABITAT. The whole of temperate North America; south into southern Mexico. They breed in suitable localities throughout the United States.

SP. CHAR. "*Adult male*: Forehead, crown and occiput blackish plumbeous, the latter snowy white beneath the surface; rest of upper parts slaty plumbeous, the nape abruptly lighter than the occiput; feathers of the nape, back, scapulars and rump with darker shaft lines; scapulars with concealed cordate and circular spots of white; upper tail coverts sharply tipped with white. Tail more brownish than the rump, sharply tipped with pure white and crossed with three broad, sharply-defined bands of black, the first of which is concealed, the last much broadest; that portion of the shaft between the two exposed black bands white. Lores grayish; cheeks and throat white, with fine, hair-like shaft streaks of blackish; ear coverts and sides of neck more ashy and more faintly streaked. Ground color beneath pure white, but with detached transverse bars of rich vinaceous rufous crossing the breast, jugulum, sides, flanks, abdomen and tibiae; the white bars everywhere (except on sides of the breast) rather exceeding the rufous in width; all the feathers (except tibial plumes) with distinct black shaft lines; lower tail coverts immaculate pure white. Lining of the wing white, with numerous cordate spots of rufous; coverts with transverse blackish bars; under side of primaries silvery white, purest basally (tips dusky), crossed with cordate bars of dusky, of which there are six (the first only indicated) upon the longest

quill (fourth). Fourth quill longest; third shorter than the fifth; second intermediate between sixth and seventh; first 2.80 shorter than the longest; graduation of tail 1.00. *Adult female*: Similar to the male. Forehead tinged with brownish; upper plumage much less bluish. Neck and ear coverts uniformly rufous, with black shaft streaks, there being no ashy wash as in the male. Tail decidedly less bluish than in the male, crossed with four bands, three of which are exposed. The rufous bars beneath less vinaceous than in the male, but of about the same amount, rather predominating on the tibiae. Fourth and fifth quills longest and equal; third longer than sixth; second intermediate between sixth and seventh; first three inches shorter than longest. *Young male*: Above, grayish umber; feathers of forehead, crown and nape faintly edged laterally with pale rusty; occiput unvaried blackish, feathers white beneath the surface. Wing coverts, scapulars and interscapulars narrowly bordered with pale yellowish umber; rump and upper tail coverts bordered with rusty. Tail paler umber than the back, narrowly tipped with white, and crossed by four bands of brownish black, the first of which is only partially concealed. Scapulars and upper tail coverts showing much concealed white, in form of roundish spots, on both webs. Beneath, clear white, without any yellowish tinge; throat with a medial and lateral series of clear dark brown streaks; jugulum, breast, sides, flanks and abdomen with numerous stripes of clear sepia, each showing a darker shaft streak; tibiae with longitudinal streaks of paler and more rusty brown; lower tail coverts immaculate. *Young female*: Similar to young male; more varied, however. The black middle streaks of feathers of head above narrower, causing more conspicuous streaks; white spots of scapular region considerably exposed; longitudinal stripe beneath narrower and more sparse."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	17.50	31.25	9.00	8.50	2.65	.65	.30
Female . . .	20.00	34.50	10.50	9.50	2.75	.80	.30

Iris bright yellow; bill and claws bluish black, light at base; cere greenish; legs and feet greenish yellow.

The birds are quite common in the Southern and Middle States, but rather rare northward, where they are only summer residents. They frequent the woodlands and groves skirting our prairie streams. A dashing, courageous bird, with the general make-up and actions of the Sharp-shinned, but they are not as destructive, killing only to satisfy hunger. Their ordinary flight is a quick flapping of the wings, relieved occasionally by sailing. Their slender build and long, rudder-like tail enables them to swiftly wind their way through the trees and to snatch a squirrel or lizard from the branches with as much apparent ease as they swoop down upon their prey in the open lands. Rabbits, mice, small birds, Bob-whites and Ducks help to make

up their bill of fare. They often boldly enter the dooryard, where I saw one of the birds strike a hen, while in defense of her brood, with a force that killed her, and then grasp in its claws a half-grown chicken and triumphantly carry it away.

Their nests are placed in the forks of medium-sized trees, from twenty-five to fifty feet from the ground; made of sticks and twigs, and lined sparingly with grass and leaves. Eggs usually four, 1.94x1.54; pale bluish white; occasionally eggs will show faint blotches of lilac to yellowish brown, especially about the larger end; in form, rounded oval.

SUBGENUS *ASTUR* LACEPEDE.

"More than one-third (about one-half) of the upper portion of the tarsus feathered in front, the feathering scarcely separated behind; frontal transverse scutellæ of the tarsus and toes interrupted in the region of the digito-tarsal joint, where replaced by irregular small scales. Tarsal scutellæ never fused."

Accipiter atricapillus (WILS.).

AMERICAN GOSHAWK.

PLATE XV.

A rare winter visitant.

B. 14. R. 433. C. 496. G. 202, 118. U. 334.

HABITAT. Northern and eastern North America; west to and including the Rocky Mountains; breeding chiefly north of the United States.

SP. CHAR. *Adult:* Above, including whole back, clear bluish gray, or plumbeous, with blackish shaft streaks; top of head deep black, the feathers pure white beneath the surface; tail bluish gray, crossed by about four dusky bands, these sometimes nearly obsolete on upper surface; lower parts white, the breast, belly, sides and flanks thickly zigzagged or irregularly barred with slaty grayish, the feathers, especially on the breast, often with dusky mesial streaks. *Young:* Above, dusky grayish brown, more or less spotted with pale buff or whitish, the feathers margined with buff, those of head and neck edged or streaked with same; tail light grayish brown, narrowly tipped with white, and crossed by four distinct bands of dusky, with a fifth less strongly marked, concealed by upper coverts; lower parts whitish or pale buff, with distinct narrow stripes of blackish, these more tear shaped on belly, broader and more spot-like on sides and flanks. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	21.00	42.00	12.75	9.40	2.85	.75	.45
Female...	22.50	44.50	14.00	11.50	2.95	.80	.45

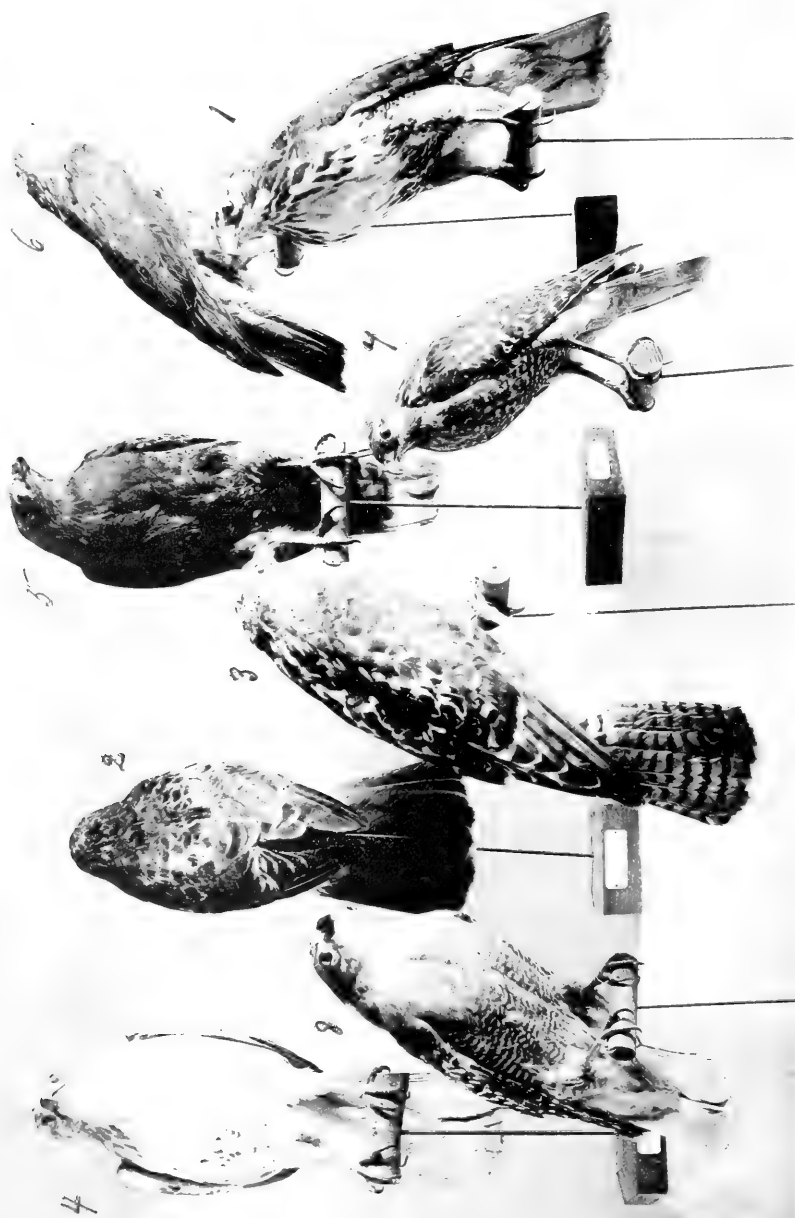


PLATE XVI.

1. RED-TAILED HAWK; Males. 2. Female. 3. Juv. Males. 4. KRIDER'S HAWK; Female. 5. WESTERN RED-TAIL; Female. 6. HARLAN'S HAWK; Males.
7. RED-SHOULDERED HAWK; Males. 8. Female.

Iris brownish to reddish orange; bill black, bluish at base; cere slate color; legs and feet yellow; claws black, occasionally a white claw.

These birds do not appear to be very abundant anywhere, but are found in greater numbers in the northern and eastern portion of their range. In the winter and spring of 1880, while collecting in Nova Scotia, I met with them quite often. They are generally known as the "Blue Hen Hawk." In actions and habits they are very similar to Cooper's Hawk, but rather more arboreal. A stout built bird, that readily kills the largest Ducks and fowls, and strong enough on the wing to carry off a bird of its own weight. Their appearance strikes terror among the barnyard fowls and Doves.

Their nests are placed in tall trees. They are composed of sticks, withered twigs and weeds, and lined with fibrous stripings from bark and grasses. Eggs usually two or three, 2.30x1.75; bluish white; sometimes with obscure markings of reddish brown; in form, rounded oval.

GENUS **BUTEO** CUVIER.

"Form robust and heavy, the wings long, and rather pointed, the tail moderate and rounded, the bill and feet strong. Bill intermediate between that of *Astur* and that of *Parabuteo*. Wing long and rather pointed, the third to fifth quill longest, the first shorter than eighth; three to four with inner webs emarginated; tail moderate, slightly rounded."

Buteo borealis (GMEL.).

RED-TAILED HAWK.

PLATE XVI.

Resident; common. Begin laying the last of February.

B. 23. R. 436. C. 516. G. 203, 119. U. 337.

HABITAT. Eastern North America; west to the Great Plains.

SP. CHAR. "Four outermost quills with inner webs distinctly emarginate. *Adult*: Upper parts rich blackish brown, approaching black on the back; scapulars and middle wing coverts edged and barred beneath the surface with dull white, and tinged along the edges with ochraceous. Wings generally of a paler shade than the back; secondaries fading into nearly white at tips, and with the greater coverts obscurely barred with darker; primaries nearly black, tips edged with paler brown, this passing into whitish; rump uniform blackish brown, feathers obscurely bordered with rusty. Upper tail coverts ochraceous white, nearly pure terminally, and with about two distinct transverse bars of

deep rufous; tail rich uniform lateritious rufous, passing narrowly into white at the tip, and about an inch (or less) from the end crossed by a narrow band of black. Head and neck with the feathers medially blackish brown, their edges rusty rufous, causing a streaked appearance; the rufous prevailing on the sides of the occiput, the ear coverts and neck. The blackish almost uniform on the forehead and on the cheeks, over which it forms a broad 'mustache;' lores and sides of frontlet whitish; throat white, with broad stripes of pure slaty brown; lower parts in general ochraceous white; tibiae and lower tail coverts immaculate; across the abdomen and flanks (immediately in front of the tibiae) is a broad interrupted belt of longitudinal black blotches, those on the abdomen tear shaped; on the flanks larger and more irregular, throwing off bars toward the edge of the feathers; whole pectoral area variegated only with a few shaft streaks of black (these growing broader laterally), and sometimes washed with rusty. Lining of the wing ochraceous white, with sparse diamond-shaped spots of pale rufous, and shaft streaks of darker; under surface of primaries white anterior to their emargination, beyond which they gradually deepen into black; the innermost ones are finely mottled with slaty, and with imperfect transverse bars of the same. *Young:* Above similar to the adult, but lacking entirely any rufous tinge, the scapulars and wing coverts more variegated with whitish. Tail light grayish brown (very much lighter than the rump), tinged, especially basally, with rufous, narrowly tipped with white, and crossed with nine or ten narrow, curved bands of black; upper tail coverts white, with broad bars of black. Head as in the adult, but the rufous wanting, leaving the streaks black and white; forehead more broadly white; chin and throat wholly white, the latter with a collar of dusky streaks across the lower part; whole pectoral region entirely immaculate pure white; abdominal band as in the adult; tibiae somewhat tinged with ochraceous, unvariegated."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	21.50	49.00	15.25	9.00	3.10	1.00	.50
Female . . .	23.50	53.00	17.00	9.75	3.20	1.10	.50

Iris of adult brown, of young yellowish; bill horn blue; cere greenish yellow; legs and feet light yellow; claws bluish black.

This large, muscular Hawk is rather evenly distributed throughout its range in the United States, and northward. In habits it is rather sluggish, feeding chiefly upon rabbits, mice and moles, which it occasionally swoops down upon from the air, but generally from a perch, where it patiently watches for its prey. It now and then drops upon a Duck, Bob-white, or stray fowl from the yard, but is not quick enough to catch the smaller birds, and never gives chase after a bird on the wing. It has not the courage or dash to venture within the dooryard, unless in a secluded place. I know the farmer generally looks upon them as an enemy, but after a careful study of their habits,

and an examination of many of their stomachs, I have reached the conclusion that they are far more beneficial than injurious, in fact, one of his best friends. In flight they are slow, but steady and strong, with a regular beat of the wings; they also delight to sail in the air, where they float lightly, and with scarcely an apparent motion of the wings, often circling to a great height; and during the insect season, while thus sailing, often fill their craws with grasshoppers, that during the after part of the day also enjoy a sail in the air.

Their nests are placed in the forks of the branches of the tallest trees on the timbered bottom lands; a bulky structure, made of sticks, and lined sparingly with grass, leaves and a few feathers. Eggs two to four, usually two or three, 2.30x1.84; bluish white, thinly and irregularly spotted and blotched with various shades of light to dark brown; in form, elliptical to oval.

***Buteo borealis kriderii* HOOPES.**

KRIDER'S HAWK.

PLATE XVI.

I have a female in the "Goss Ornithological Collection," that I shot near Wallace, Kansas, and I have since met with the birds in the western part of the State, where they no doubt occasionally breed.

B. —. R. 436a. C. 519. G. —, 120. U. 337a.

HABITAT. The Great Plains, from Minnesota to southern Texas; east casually to Illinois and Iowa.

SP. CHAR. "*Adult*: Similar to *B. borealis*, but beneath continuous pure white, without rufous tinge, and without distinct spots across the abdomen, or lacking them entirely; above much lighter, the brown, light rufous and white being about equal in amount. Upper tail coverts immaculate white; tail pale rufous, the shafts pure white, and the webs mixed with white along their edges, its amount increasing toward the base; no trace of a dusky terminal bar, or else only indicated by badly-defined spots. *Young*: Differing from that of *B. borealis* in the immaculate snowy white lower parts, nearly equal extent of the white and dusky on the upper parts, and whitish cast of the tail."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male.....	21.50	50.00	15.25	9.50	3.10	1.00	.50
Female....	23.50	53.25	16.75	10.00	3.20	1.10	.55

My notes all show the iris to be yellowish white, to light reddish brown; bill and claws dark horn blue, pale at base; cere greenish; legs and feet dull yellow; claws black.

This bleached variety of the Red-tailed Hawk does not appear to differ from the same in actions or habits. Eggs, according to Ridgway, 2.31x1.80.

***Buteo borealis calurus* (CASS.).**

WESTERN RED-TAIL.

PLATE XVI.

Irregular winter sojourner; at times, quite common. I have never noticed the birds in the State during the summer months. They begin to arrive, generally, the last of October, and leave by the last of March.

B. 20, 24. R. 436b. C. 517. G. 204, 121. U. 337b.

HABITAT. Western North America: south into Mexico; east to Kansas; casually to Illinois.

SP. CHAR. Plumage often chiefly blackish (sometimes entirely sooty), except tail and its upper coverts. *Adult:* Varying, individually, from a light extreme which is scarcely distinguishable from true *B. borealis* to a uniform dark sooty brown, through every conceivable intermediate plumage; some melanistic specimens have the whole chest and breast rusty or rufous (corresponding to the white area of very light colored birds), but this is wholly obliterated in the complete melanism. *Young:* Darker throughout and more heavily spotted beneath than in true *B. borealis*, the plumage sometimes wholly dusky (except the tail), as in the adult. Tail of adult always with a black subterminal bar, and frequently with several more or less complete additional bars. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	19.50	48.50	15.25	8.50	3.10	1.00	.50
Female	22.00	51.00	16.50	9.50	3.20	1.10	.55

Iris brown; bill horn blue; cere greenish yellow; legs and feet yellow; claws black.

This dark Western race does not appear to differ in habits from the Eastern bird. A set of four eggs, collected May 21st, 1878, in Santa Barbara county, California, from a nest in a popular tree, about thirty feet from the ground, measure: 2.23x1.86, 2.31x1.84, 2.36x1.84, 2.39x1.87; ground color dull bluish to cream white, irregularly spotted and blotched with pale to dark vandyke brown, mixed with markings of light purple brown, all rather oblong in shape, and running lengthwise on the egg; in form, oval.

Buteo borealis harlani RIDGW.

HARLAN'S HAWK.

PLATE XVI.

A rare visitant. The first specimen collected in the State is in the State University. In the "Goss Ornithological Collection" I have three of the birds, out of four killed at Neosho Falls. I am inclined to think that I have seen others, but at a distance they so closely resemble the dark phase of the Western Red-tail, that I am not certain.

B. 22. R. 438. C. 515. G. 205, 122. U. 338.

HABITAT. As given in the A. O. U. Check List, "Kansas, Louisiana and Texas; south to Central America; casually in southern Illinois and Pennsylvania." The birds taken in Kansas were all captured during the winter and spring months, which leads me to think their range extends much farther north than given.

SP. CHAR. Outer webs of quills grayish brown, marked with quadrate dusky spots, producing bands; bare portion of tarsus in front less than 2.00. Middle toe usually more than 1.60 (minimum 1.50, maximum 1.95); tail of adult usually with much of rufous, with or without darker bands; young with tail grayish brown, crossed by nine or ten distinct narrow bands of dusky. Head and neck uniform dark sooty brown or blackish, or else streaked with white (very rarely, if ever, streaked with buffy or ochraceous.) *Adult:* Tail confusedly or irregularly mottled with grayish, rusty white and dusky, either color predominating (except the last) according to the individual, crossed near end by a more or less distinct subterminal band, and tipped with whitish; upper parts chiefly (sometimes entirely) dark sooty brown or blackish (varying to deep black); lower parts varying from entirely deep sooty brown or black to pure white, but, if the latter, always more or less streaked and spotted, especially across belly and on sides of breast, with dusky. *Young:* Tail banded with grayish brown and dusky, the two colors of about equal extent; otherwise much like adult. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	21.00	48.50	15.00	8.75	3.00	1.00	.45
Female	22.00	52.00	16.25	9.50	3.20	1.10	.45

Iris brown; bill horn blue; cere greenish yellow; legs and feet yellow; claws black.

This bird, formerly entered as a species (*B. harlani*), is now regarded as a geographical color phase of *B. borealis*, and will stand in the next supplement to the A. O. U. Check List as above named.

Audubon was the first to discover this bird, and he speaks of it as superior in flight and more daring than the Red-tailed Hawk; but from my limited observation it does not appear to differ either in flight, actions or habits. In the craws and stomachs of the four killed at Neosho Falls, I did not find a feather. They were chiefly filled with the remains of rabbits. Its nest and eggs are unknown.

***Buteo lineatus* (GMEL.).**
RED-SHOULDERED HAWK.

PLATE XVI.

Resident; common in the eastern part of the State. Begin laying in March.

B. 25. R. 439. C. 520. G. 206, 123. U. 339.

HABITAT. Eastern North America; north to Nova Scotia and Manitoba; west to the edge of the Great Plains; south to the Gulf coast.

SP. CHAR. Outer webs of primaries distinctly spotted with white, buffy or ochraceous; tail narrowly banded with white, buffy or ochraceous, lesser wing coverts more or less rusty. *Adult:* Head, neck and lower parts more or less rusty, or cinnamon, the first two streaked with dusky, the posterior lower parts more or less barred or transversely spotted with whitish; quills and tail black, the former spotted on outer webs with white, the latter crossed by about six narrow bands of and tipped with the same. *Young:* Head, neck and lower parts buffy or dull whitish, streaked and striped or longitudinally spotted with dark brownish; quills and tail dusky, the former extensively spotted on basal portion of outer webs with buffy or ochraceous, the latter crossed by numerous narrow bands of dull buffy or pale grayish brown (the more anterior ones more ochraceous). *Downy young:* Uniform dull grayish white. Adult with head and neck distinctly rusty; rufous or rusty of anterior lower parts (chest and breast) usually distinctly barred or transversely spotted with white. *Young:* Lower parts usually with whitish predominating, and basal half of outer webs of quills extensively ochraceous, buffy or whitish. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	18.50	39.00	12.50	8.50	3.10	.80	.45
Female	21.00	43.00	13.60	9.25	3.20	.90	.50

Iris brown; bill and claws dark horn blue; light at base; cere, legs and feet dark yellowish green.

This robust species inhabits the woodlands, where it feeds chiefly upon squirrels, rabbits, mice, moles, lizards, etc. It occasionally drops upon an unlucky Duck or Bob-white, but is

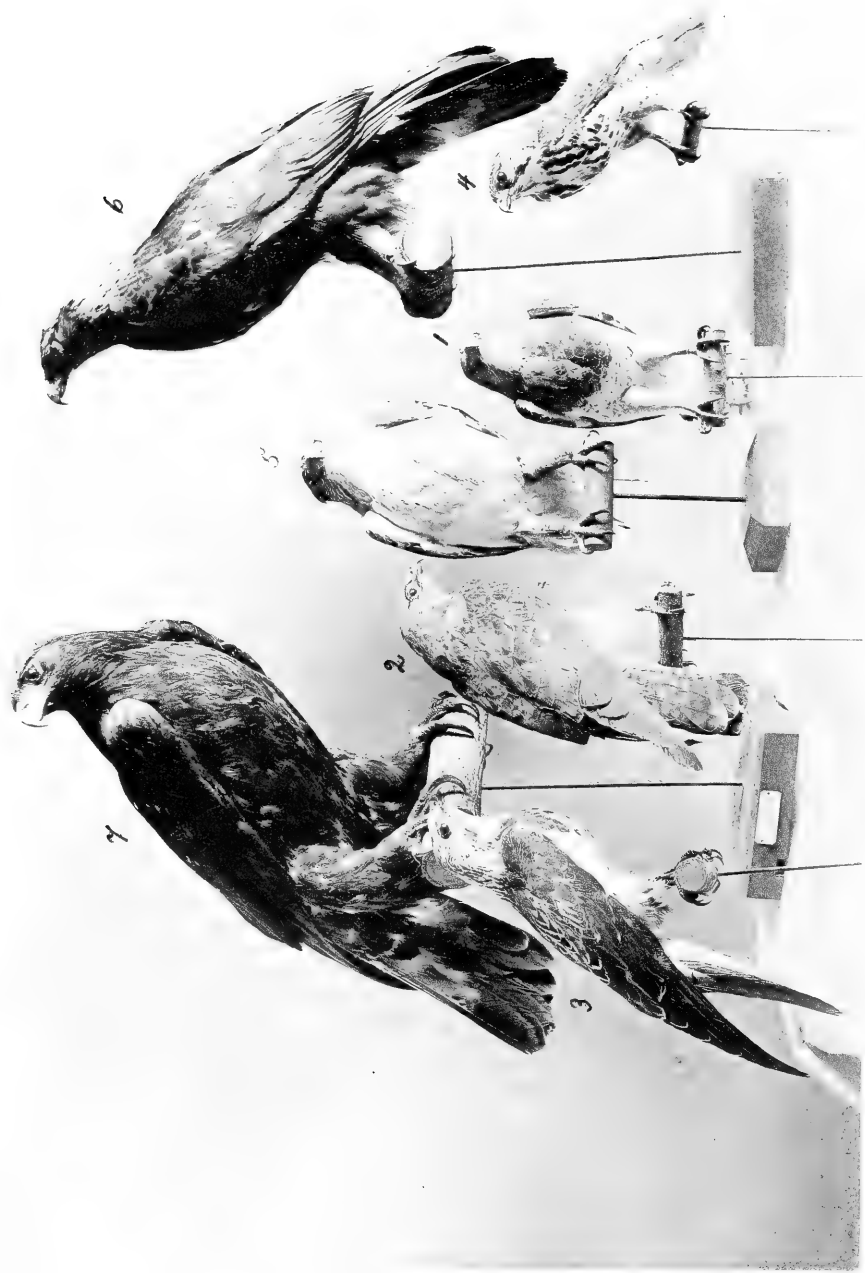


PLATE XVII.

1. SWAINSON'S HAWK; Male. 2. Female. 3. Juv. Female. 4. BROAD-WINGED HAWK, Juv. Female. 5. FERRUGINOUS ROUGH-LEG, Female. 6. GOLDEN EAGLE; Male. 7. Female.

not quick enough to catch the smaller birds. It is also quite destructive to domestic fowls raised in or near the timber, but does not appear to search for food far away from its natural haunts. These birds are very noisy, and during the early breeding season their loud, harsh "Kee-oo" is heard from the perch and while in the air, often keeping up the cry for a long time without intermission.

In flight their movements are similar to the Red-tailed. They seem to be greatly attached to the grounds selected for a home, and vigilantly guard the same, not allowing a bird of prey to forage within their claimed limits; they also nest for years in the same tree. I collected at Neosho Falls, Kansas, for several successive years, a set of their eggs from a nest in the forks of a medium-sized oak. In about nine days after each robbery, the birds would commence laying again, and I allowed them to hatch and rear their young. One winter during my absence the tree was cut down; this did not discourage the birds or cause them to forsake the place, for, on the approach of spring, I found them building a nest not over ten rods from the old one, but this time in a large sycamore, and beyond our reach. The birds both assist in hatching and rearing the young, the males being fully as attentive as their mates.

Their nests are placed in the forks of branches of medium sized trees, twenty to fifty feet from the ground, composed of sticks and twigs, and sparingly lined with soft strippings of bark, leaves, and a few feathers. Eggs three or four, 2.20x1.70; bluish white, irregularly spotted and blotched with varying shades of light to dark reddish brown; varying in form from subspherical to oval.

***Buteo swainsoni* BONAP.**

SWAINSON'S HAWK.

PLATE XVII.

Resident; rare in eastern, common in the middle and western portions of the State. Begin laying about the middle of May.

B. 18, 19, 21, 28. R. 442. C. 523. G. 207, 124. U. 342.

HABITAT. Western North America; east to Arkansas, Illinois and Wisconsin (casually to Massachusetts); north to the Arctic

regions; south through the greater part of South America to Argentine Republic.

SP. CHAR. Only three quills with inner webs distinctly emarginated. Tail grayish brown, or brownish gray, sometimes with a hoary tinge, crossed by an indefinite number (about nine or ten) of narrow dusky bands, which toward base of tail become gradually indistinct and finally obsolete. *Adult male, normal plumage:* Above, nearly uniform grayish brown; forehead, chin and throat white, usually abruptly defined, and forming a distinct patch; chest and upper part of breast usually plain rufous or cinnamon (rarely mixed or broken with whitish); rest of lower parts buffy whitish, sometimes immaculate, but usually more or less barred or spotted with brownish. *Adult female, normal plumage:* Similar to the male, but chest patch grayish brown instead of rufous or cinnamon. *Melanistic phase, both sexes:* Whole plumage uniform sooty brown, the under tail coverts sometimes spotted or barred with rusty or whitish.* *Young:* Tail as in the adult; above, blackish brown, varied with buffy or ochraceous; head, neck and lower parts creamy buff (deeper on younger, paler in older individuals), the lower parts usually more or less spotted with blackish, the head and neck streaked with the same. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	19.00	48.50	15.00	8.00	2.55	.85	.50
Female . . .	21.00	52.00	16.00	9.00	2.75	.95	.52

Iris brown; bill and claws black; cere, legs and feet greenish yellow.

This is one of the most common and harmless of the genus *Buteo* upon our western prairies. They seldom venture near the habitations of man, appearing to prefer the uncultivated fields, and are at home upon the wild prairies and plains, where they put in a large share of their time perched upon a slight elevation patiently watching for rabbits, gophers, mice, lizards, young birds, etc., or in the air coursing over the prairies, filling up as they go with the grasshoppers that take their afternoon airing. Occasionally a full-grown bird is taken by surprise, but they are not swift enough to catch in the chase. I have on several occasions seen them swoop down for a Meadowlark, but each time the frightened bird escaped. Their manner of flight is similar to the Red-tailed, and, although a more slender bird, do not seem to be quicker in actions.

Their nests vary in height, from the shrubby bushes of the plains to the high trees in the timber; a bulky nest, constructed

* In different individuals may be seen every possible intermediate condition of plumage between this complete melanism and the light colored normal plumage described above.

of sticks and twigs, and scantily lined with a few weeds or grasses. Eggs three to five, 2.25×1.75 ; dull bluish white; vary greatly in markings, some thinly and rather evenly specked and spotted, others with irregular blotches and splashes of faint to dark reddish brown and a few stains of purple; in form, rounded oval.

***Buteo latissimus* (WILS.).**

BROAD-WINGED HAWK.

PLATE XVII.

A summer resident in the eastern part of the State; rare. Arrive about the first of April; leave by the first of November (at least I have not seen them later).

B. 27. R. 443. C. 524. G. 208, 125. U. 343,

HABITAT. Eastern North America; north to New Brunswick and western Manitoba; west to the edge of the Great Plains; south in winter to northern South America.

SP. CHAR. "Only three outer quills with inner webs emarginate. *Adult:* Upper surface dark umber brown, the feathers gradually paler toward edges; on the back the feathers are more uniform dusky, causing a prevalent blackish appearance; rump and upper tail coverts blackish vandyke brown; the latter tipped with pure white, and with a concealed bar of same about the middle of each feather; tail dull black, with an obscure terminal band of dull brown, this fading terminally into whitish; across the middle of the tail a broad band of dull light umber (in some individuals approaching dull white) about three-fourths of an inch in width; about as far anterior to the main band as this is from the tip is another much narrower and more obscure band of the same color, crossing just beyond the ends of the coverts, or concealed by them. Primaries uniform brownish black, fading on terminal edge into pale brown; head above, and broad but inconspicuous 'mustache' running from beneath the lore downward across the cheek, dull black; the crown posteriorly, with the occiput and nape, having the dull black much broken, caused by lateral streaks of dull rufous on all the feathers; this dull rufous tint prevails on the rest of the head and neck, as well as the breast, leaving the lores and chin and lateral portion of frontlet alone whitish; throat streaked with blackish; beneath dull brownish rufous, that of the breast almost unvaried; medially, however, are roundish spots of white on opposite webs, but these are not confluent; posteriorly these spots become gradually more numerous and more transverse, forming on the flanks transverse bands, almost continuous; on the tibiae the white prevails, the rufous bars being more distant, and connected only by a brown shaft line; lower tail coverts less numerous, transverse spots of dull rufous; lining of the wing ochraceous white, with sparse, rather small, irregular deltoid spots of dull rufous; under surface of the primaries unvaried white, as far as their emargination, beyond which they are black; fourth quill longest; third a little shorter; second intermediate between fifth and sixth; first about equal to the ninth.

Young male, second year: Upper parts similar to adult, but a reddish tint appreciably washing the edges of the interscapulars and (less noticeably so) the scapulars; bands on tail nearly as in adult; but very near the base in fourth, very narrow and faintly defined pale band, while the bases of all the feathers are much mottled with white; dull rufous of the breast not continuous, but in the form of large longitudinal broad spots, occupying the greater middle portion of each feather; abdomen, sides and tibiae with smaller and more cordate spots of dull rufous; the lower tail coverts immaculate; the decided ochraceous tinge beneath deepest posteriorly. *Young, first year:* The blackish above is much variegated, being broken by the narrow rusty borders to interscapulars, rump, and lesser wing coverts; the broader and more ochraceous borders to scapulars and greater wing coverts, and partially concealed whitish spotting on the former. Upper tail coverts white, with broad bars of blackish brown; secondaries and primaries edged terminally with whitish; tail dull umber brown, growing darker terminally; narrowly tipped with white, and crossed with six obscure narrow bands of dusky, the (concealed) bases of all the feathers white; superciliary region, cheeks, chin, throat, and entire lower parts, delicate pale ochraceous or whitish cream color; a conspicuous 'mustache', a medial longitudinal series of streaks on the throat, with large, longitudinal ovate spots on sides of breast, cordate spots on sides and flanks, and sagittate spots on tibiae, clear blackish brown; the ochraceous deepest on the abdomen and crissum; wing beneath as in adult."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	15.00	34.00	10.00	6.50	2.35	.65	.45
Female . . .	16.00	35.00	10.50	7.25	2.40	.80	.45

Iris brown (juv., yellowish brown); bill horn blue, light at base, dark at tips; cere greenish yellow; legs and feet yellow; claws black.

This species inhabits the woodlands, where they are often to be seen sailing over the tree tops, but seldom far away from their natural haunts. I have occasionally met with the birds in winter in eastern Guatemala, Spanish Honduras, and, during the summer months, in the Neosho valley, Kansas, the Indian Territory, and at Pewaukee, Wisconsin. At the latter place I found them nesting and the most common. In their search for food, they watch from a perch or noiselessly fly through the tree tops and near the ground, often hovering for a moment before dropping upon their prey, which they usually devour on the ground or where taken. I consider these birds to be, like all the *Buteo* family, friends of the farmer rather than his enemy, because they feed chiefly upon rabbits, squirrels, gophers, mice and moles; they occasionally catch a young bird, but are not quick

enough to capture a full grown one, unless it is taken by surprise; and the good they do largely overbalances the harm.

Their nests are placed in trees. They vary in height from fifteen to fifty feet, and are composed of sticks and lined with strippings from bark, fibrous rootlets and grasses. Eggs usually three or four, 1.96x1.57; ground color dull white, spotted and blotched with varying shades of yellowish to dark brown; in form, oval to rounded oval.

GENUS **ARCHIBUTEO** BREHM.

"Similar to *Buteo*, but bill and feet weaker, wings longer and tarsi feathered in front to the toes. Bill small, compressed anteriorly, but very broad through the gape; upper outline of the cere ascending basally; nostril broadly oval, nearly horizontal. Tarsus densely feathered in front and on the sides down to the base of the toes; naked behind, where covered with irregular scales. Tarsus more than twice as long as the middle toe; basal half of the toes covered with small scales; outer toe longer than inner; claws long, strongly curved, acute. Feathering of the head and neck normal. Wing very long; the third to fourth quill longest; first shorter than seventh; outer four or five with inner webs deeply emarginated. Tail moderate, rounded. Plumage full and soft."

Archibuteo lagopus sancti-johannis (GMEL.).

AMERICAN ROUGH-LEGGED HAWK.

PLATE XIX.

A winter sojourner; common. Arrive the last of November; leave in March.

B. 30, 31. R. 447. C. 525. G. 209, 126. U. 347a.

HABITAT. The whole of North America north of Mexico; breeding chiefly north of the United States.

SP. CHAR. "Too variable in coloration of plumage to be concisely described. *Adult, normal plumage:* Ground color of the upper parts dull umber cinereous, this more rufous on the shoulders and dull white on the nape, scapulars, inner secondaries and upper tail coverts; rump entirely black, feathers bordered with whitish. All feathers above with central oblong or irregular spots of black, this color predominating on top of head and forming transverse bands across the wing coverts and secondaries; upper tail coverts pure white, each marked with an exceedingly irregular, transverse spot of black. Tail white on basal two-thirds, and narrowly but sharply tipped with the same; subterminal portion pale mottled cinereous, with a very broad zone of black next the terminal white, and anterior to this three narrower and more irregular bands of the same. Primaries blackish cinereous, with obsolete darker bands. Ground color of head and lower parts dull white; cheeks thickly streaked with black; ear coverts and throat more sparsely streaked; forehead and suborbital region plain whitish.

Breast with large, longitudinal but very irregular oblong spots of dark brown, these largest and somewhat confluent laterally; lower part of breast with much less numerous and less longitudinal spots; tibiae strongly tinged with rusty, and with tarsus, abdomen, crissum and flanks having irregular transverse spots of blackish brown; lower tail coverts unvariegated. Lining of wing white, with numerous spots of black, these becoming more rusty towards the axillars, a large space of continuous clear black covering the under primary coverts and the coverts immediately anterior; under surface of primaries and secondaries pure white, the former becoming black at ends, the latter ashy; no bars (except toward shafts) of the latter. Fourth quill longest; the third equal to fifth; second intermediate between fifth and sixth; first equal to eighth. *Young:* Upper surface generally light umber, becoming lighter on scapulars and middle wing coverts, but showing nowhere any trace of spots or bands; wings, scapulars and back with blackish shaft streaks; primaries approaching black toward ends, becoming white basally; upper tail coverts white, with a hastate stripe of brown along shaft; tail, basal half white, terminal half plain drab, becoming darker terminally, the tip narrowly white. Head, neck, and lower plumage in general, white stained with ochraceous, this deepest on tibiae and tarsi; head and neck streaked with dark brown, ear coverts almost immaculate; breast with oblong spots of clear brown; flanks, abdomen and anal region continuous uniform rich purplish vandyke brown, forming a conspicuous transverse belt; tibiae and tarsi scarcely varied, the few markings longitudinal; lower tail coverts immaculate. Under side of wing much as in adult (black area, however, more extended), lining much tinged with rufous, and with longitudinal streaks of dark brown. *Adult, melanistic condition:* General plumage blackish brown, the head streaked with whitish edges of the feathers; wing coverts, secondaries, primaries and tibial plumes paler terminally; tarsi mottled with whitish; upper and lower tail coverts tipped obscurely with white. Tail narrowly tipped dull white, and with about five very obsolete pale ashy bands. Lining of wing black, spotted with white near edges; whole under surface of the primaries pure white anterior to their emargination, beyond which they are black. Third and fourth quills equal and longest; second intermediate between fifth and sixth; first shorter than seventh. *Young:* Similar, but the tail dusky, growing whitish toward the base, and without any bars."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male.....	21.00	52.00	16.25	8.75	2.70	.85	.40
Female...	23.00	53.00	17.00	9.25	2.80	.90	.40

Iris brown (of two birds captured, yellow); bill dark horn blue, light at base; cere and feet yellow; claws black.

This large, powerfully built Hawk usually frequents the cultivated fields and low bottom lands along the streams skirted with timber. A rather sluggish bird (more active at twilight than during the day), that does not appear to have the courage to attack animals more formidable than rabbits, squirrels, gophers, mice, etc., for which they course over the ground, or

watch from a perch, often sitting motionless for hours, especially where the corn is in shock, ready to pounce upon the mice that venture from beneath the shocks. They are too slow to catch the full-grown birds, and seldom make the attempt. They are of great value to farmers and should be protected. Their nests are generally placed in trees, occasionally upon cliffs; a rather bulky structure, composed of dry sticks and twigs, and lined with grasses or soft material at hand. In the Arctic regions they are said to be warmly lined with feathers and down. Eggs usually three or four, 2.21x1.75; ground color dull white to buffy white, irregularly spotted and blotched with varying shades of umber to sepia brown; intermingled with these are shell stains of purple; in some cases the eggs are nearly unmarked, and the clouding faint; in form, oval to ovate.

Archibuteo ferrugineus (Licht.).

FERRUGINOUS ROUGH-LEG.

PLATE XVII.

Resident; rare in the middle, common in the western part of the State.

B. 32. R. 448. C. 526. G. 210. 127. U. 348.

HABITAT. Western North America; north to the Saskatchewan; south into Mexico; east into Texas and Iowa; casually to Illinois.

SP. CHAR. Bill much larger and stronger, and broader at base, the width of gape (measured from corner to corner of mouth), 1.70x1.90. *Adult, normal phase:* Upper parts generally and thighs ferruginous, the former streaked, the latter barred with dusky; secondaries and quills plumbeous, the latter with a hoary cast; tail white, washed with pale ashy gray, more or less stained, usually longitudinally, chiefly along edges of feathers, with light rusty, and sometimes crossed near tip by an indistinct subterminal bar or narrow band of dusky; lower parts (except thighs) pure white, sometimes streaked with dusky. *Young:* Above, grayish brown, the feathers edged with rusty or ochraceous; thighs white, more or less spotted with dusky brownish or dusky; tail with basal third (approximately) white (inner webs wholly white), the rest brownish gray, usually with several, more or less distinct, darker narrow bands. *Melanistic phase (adult):* General color deep chocolate brown, more or less varied above by rusty spotting and edgings; lower parts mixed rusty and chocolate, either tint prevailing; tail as in normal phase. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	22.25	53.25	16.30	9.50	3.10	1.00	.45
Female . . .	23.50	55.00	17.25	10.00	3.20	1.10	.50

Iris light yellowish brown; bill dark horn blue, with sides at base, also cere, greenish yellow; feet bright yellow; claws black.

This large species inhabits the prairies and plains. In other respects, its habits are not noticeably different from the American Rough-legged Hawk.

Their nests are usually placed in trees, occasionally upon high, rocky cliffs. May 27th, 1883, I found a nest in a cottonwood tree, on the Smoky Hill River, near Wallace, Kansas, containing four young birds, not over two weeks old (downy whitish little fellows, with bluish black skins). The nest, a bulky one, at least three feet in diameter at the base, was composed of sticks and dead twigs from the tree, and sparingly lined with weeds and grasses. And May 4th, 1884, my brother found a nest, containing four eggs, in northern Dakota, upon the ground, upon a precipitous hillside. It was made of sticks, interwoven with buffalo ribs, stems of weeds and bits of turf, and lined with grass. Eggs usually three or four; average measurement of eight, 2.49x1.96; ground color dull cream white; irregularly spotted and splashed with varying shades of brown (upon some the markings are very faint); in form, rather rounded oval.

GENUS **AQUILA** BRISSON.

“Form robust and structure powerful; the bearing and general aspect that of *Buteo* and *Archibuteo*. Wing long, the primaries long and strong, with their emarginations very deep. Tail rather short, slightly rounded or wedge shaped. Bill stronger than in the preceding genera, its outlines nearly parallel, and the tip somewhat inclined backward at the point; commissure with a more or less prominent festoon; nostril narrow, oval, vertical; skin of the cere very hard and firm; superciliary shield very prominent. Feet very strong, the membrane between the outer and middle toes very well developed; tarsus less than twice as long as the middle toe; outer toe equal to, or longer than, the inner; claws very long and strong, very much graduated in size; scutellæ of the toes small, except on the terminal joint, where they form broad, transverse plates; tarsi densely feathered all round down to the base of the toes; tibial plumes well developed, loose webbed, their ends reaching down to or beyond the base of the toes. Feathers of the nape and occiput lanceolate, acute and distinct, forming a nuchal “cape” of differently-formed feathers. Third to fifth quill longest; first shorter than seventh; outer five or six with their inner webs deeply emarginated.”

Aquila chrysaetos (LINN.).

GOLDEN EAGLE.

PLATE XVII.

Resident; rare. I am informed by Dr. G. K. Rumsey that a pair nested for several years in the southeastern part of Comanche county, on a high gypsum ledge; and, as a proof that he was not mistaken, he says that the legs of a young bird captured were feathered to the toes. The late rapid settlement of the county has put a stop to their breeding there. Begin laying about the middle of March.

B. 39. R. 449. C. 532. G. 211, 128. U. 349.

HABITAT. Northern portion of northern hemisphere; south to Mexico.

SP. CHAR. "*Adult*: General plumage fuliginous black, this deepest on the head, throat, lower surface in general, under surface of the wings, back, scapulars, shoulders, secondaries, primaries and rump; middle and secondary wing coverts, upper and lower tail coverts, tarsi and inside of tibiae considerably paler, inclining to light umber. Lanceolate feathers of occiput and nape with the exposed portions light fulvous, the shafts black; dusky beneath the surface. Tail black, somewhat paler on basal half, and with about three irregular, obsolete zigzag bands of pale brown (on two middle feathers ashy); no concealed white on breast. Fifth quill longest; third and fourth intermediate between fifth and sixth; second considerably shorter than sixth; first intermediate between eighth and ninth. *Young*: Continuous deep sepia black, with purplish luster; breast and scapulars with large, concealed spots of pure white; lanceolate feathers of the 'mane' dull brown, not conspicuously different from the throat; under surface of the primaries showing much white basally, this most extended on inner feathers. Upper and under tail coverts more brownish than the rump, the basal portion white. Basal half or more of tail white (more ashy on outer feathers), distinctly defined against the broad, pure black terminal zone; tarsi dull white, clouded with dilute brownish; inside of tibiae with feathers tipped with white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	32.50	80.00	23.00	12.75	4.00	1.62	.70
Female . . .	35.50	86.00	25.50	14.00	4.10	1.75	.75

Iris brown; bill and claws horn blue; cere and feet greenish yellow.

The natural home of this king of birds is within the mountain regions; it is rarely met with in the eastern portion of the United States, and is not abundant anywhere, but the most common in the western portion of its range. In flight this bird is not swift, but very powerful, sailing for hours without an apparent effort, and often at a great height—a mere speck in

the sky. It is gifted with extraordinary sight, and swoops down upon its prey with unerring certainty. A ferocious monarch; a tiger among birds. It preys upon Grouse, Ducks, Geese, Swans, young fawns, lambs, prairie dogs, rabbits, ground squirrels, etc. Some writers state that when pressed with hunger they feed upon carrion. While I know this to be the case with the Bald Eagle, I think this proud bird would starve rather than feed upon a putrid carcass.

I kept one of these birds (a female) over a year in confinement, feeding her chiefly upon fresh beef; if the least bit tainted she would not touch it, neither would she eat a fresh piece accidentally dropped upon the ground from her claws. A Bald Eagle, in an adjoining pen, would readily eat meat in any stage, and gladly take the pieces rejected by the more noble bird. I tried hard to subdue her, or to be at least on friendly terms, but failed. I know that the birds have been occasionally partially tamed, but this one was untamable, and maintained, during her confinement, the same wild, defiant, ferocious spirit exhibited at her capture. She was especially furious when a dog entered the yard. I saw her pounce upon, pick up and take to her perch a large house cat that ventured within her prison for bits of meat. The grasp was so powerful that life was instantly crushed out—not a struggle, and only a slight quiver of the muscles noticeable. I have often heard them scream loudly in their mountain home, but my bird was sullen and mute.

Their nests are enormous structures of sticks, etc., usually placed on rocky shelves of inaccessible cliffs, occasionally in trees. May 5th, 1884, I found, at Julian, California, a nest placed in and near the top of a tall pine tree—a huge platform structure composed of sticks and twigs, and lined sparingly with grass, moss, and a few feathers. Eggs two or three, 2.90x2.25; white, occasionally unmarked, but usually spotted and blotched with various shades of drab to reddish brown, and a few faint purple shell markings; in form, broadly subspherical.

GENUS **HALIÆTUS** SAVIGNY.

“Form robust, and organization powerful, as in *Aquila*; size large. Bill very large, usually somewhat inflated, the chord of the arch of the culmen more



PLATE XVIII.

1. BALD EAGLE; Juv. Male. 2. Female. 3. PRAIRIE FALCON; Male. 4. Female. 5. DUCK HAWK Male. 6. Female. 7. PIGEON HAWK; Male. 8. Female.

than twice the length of the cere on top; commissure with a more or less distinct festoon and sinuation behind it. Nostril oval, obliquely vertical. Feet robust and strong, the tarsus less than one and one-half times the middle toe; tarsus feathered in front and on the sides for about one-half its length; front of the tarsus and top of the toes with an imperfect continuous series of transverse scutellæ, entirely interrupted in the region of the digito-tarsal joint; the other portions covered with roundish, somewhat granular scales, these larger on the posterior face. Claws large, strongly curved, and more obtuse, and less graduated in size, than in *Aquila*. No trace of a web between outer and middle toes. Wing very large, the primaries well developed and strong; third to fifth quill the longest; first longer than ninth; outer five to six with inner webs deeply emarginated. Tail variable in length and shape, usually short and rounded, cuneate, and with twelve feathers. Feathers of the neck, all round, lanceolate."

***Haliaeetus leucocephalus* (LINN.).**

BALD EAGLE.

PLATE XVIII.

Resident; rare; not uncommon in winter. Begin laying about the middle of March.

B. 41. 43. R. 451. C. 534. G. 212, 129. U. 352.

HABITAT. The whole of North America; north to Greenland, and west across the Aleutian chain to Commander Islands, Kamtchatka.

SP. CHAR. *Adult:* With head and neck pure white, in abrupt contrast with color of the body; tail coverts also white. *Young:* With plumage blackish, grayish brown and white, without cinnamon brown or Isabella color. *Adult:* Head, neck, tail coverts and tail entirely white; rest of plumage dusky grayish brown, varying to brownish black (the margins of the feathers usually paler). *Immature, second or third year:* Head and neck blackish, the lanceolate feathers of hind neck tipped with pale brownish, all the feathers pure white beneath the surface; upper parts mixed grayish brown and blackish, usually with more or less admixture of whitish; tail blackish, the inner webs of feathers more or less blotched or "spattered" with whitish; lower parts mixed white and dusky, either color predominating, according to the individual. *Young, first year:* Whole plumage nearly uniform black, the feathers of lower parts, however, with their bases white, this more or less concealed in places, producing a somewhat spotted or blotched appearance. *Downy young:* Uniform sooty gray. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	32.00	79.00	22.00	11.50	3.40	2.18	.80
Female...	35.25	84.50	24.00	12.75	3.50	2.22	.90

Iris grayish white, tinged with yellow; bill and cere light yellow; legs and feet brownish to lemon yellow.

This national bird is quite common along the seacoast and

rivers within the United States, and northward. In build and habits it is closely allied to the *Buteo* family, and has none of the daring dash of the *Accipiter* or Falcon tribes, and lacks the courage of the Golden Eagle. If the founders of our nation had known the habits of this scavenger and piratical bird, they would never have selected it as a symbol, but, rather, the bold, self-reliant Golden Eagle. In the air, it is indeed a graceful and magnificent bird, and with its powerful build and proud appearance, they were naturally led to look upon it as the embodiment of courage and perfection. Respecting the habits of the Bald Eagle, Dr. Brewer says:

“The Bald Eagle appears to be equally well adapted by nature for the endurance of heat or cold, and is apparently indifferent to either. Its residence is influenced only by its abundance of food, especially that of fish; and seems to matter very little whether that plenty is procurable within the Arctic circle, or on the coast and rivers of Florida and Texas. In places like the falls of Niagara, where the stream is ever liable to contribute the remains of animals destroyed by the descent of the torrent, this Eagle is especially abundant. Unscrupulous, greedy, voracious, not select in its choice of food, and capable of providing for itself when necessity compels, we find this not altogether unsuitable emblem of our country now enacting the tyrant and robber, and plundering the Fish Hawk of the fruits of its industry, now sharing with the Raven and the Vulture the dead salmon of the Columbia, and in other places diving for and catching its own fish. The impetuosity and skill with which it pursues, overtakes and robs the Fish Hawk, bearing off a fish it has just taken, must be witnessed to be appreciated; and the swiftness with which the Eagle can dart down upon and seize the booty, which the Hawk has been compelled to let fall, before it reaches the water, is not the least wonderful feature of this striking performance. On the banks of the Columbia, where there are no Fish Hawks to depend upon, this bird finds an easy subsistence on the vast numbers of dead and dying salmon which abound.”

While these birds are rather indolent, and prefer to be rob-

bers rather than self-sustaining, they do not lack in courage nor in ability to capture their prey. I have, on several occasions, seen them plunge for and catch fish that were swimming near the surface of the water; they also readily kill Ducks, Geese, lambs, little pigs, etc. They are easily tamed. One that I had in confinement for a long time, became not only familiar, but appeared to be greatly attached to me, and would recognize me at a long distance, calling loudly, and on my near approach, with quivering wings, and in various ways, expressed joy, keeping up a soft, whistling note—that was at times quite musical—until I reached her. She loved to be petted; would rub her head against my face, and allow me to lift her from the perch; a rather rough playmate, that often tore my clothes in attempting to alight upon my shoulder, but not intentionally, and never appeared to be angry with me, but would not allow strangers to touch her.

Their nests are usually placed on high trees, along the banks of streams, but occasionally, where trees are not convenient, built on high, rocky cliffs; a huge platform structure, made of large sticks, and lined with twigs, grasses, and a few feathers. Eggs usually two, sometimes as high as four; average measurements, as given by others, about 2.90x2.30; but two, that I collected at Neah Bay, Washington, only measure: 2.50x1.95, 2.60x2.00; dull white, unmarked; in form, rounded oval.

SUBFAMILY FALCONINÆ. FALCONS.

Nostril small, circular, with a conspicuous central bony tubercle, or else narrow, obliquely vertical, with the upper end the posterior one. (*Ridgway*.)

GENUS **FALCO** LINNÆUS.

“Bill strong, its breadth at the base equaling or exceeding its height; upper outline of cere on a level with, or rather lower than, the base of the culmen; gonys much arched, the chord of the arch equaling about half that of the culmen. Near the tip of the upper mandible is a prominent tooth on the commissure, and near the end of the lower mandible, which is truncated, is a deep notch corresponding; the end of the upper mandible is compressed, giving the situation of the tooth an inflated appearance when viewed from above. Nostrils circular, with a conspicuous central tubercle. Orbital region bare; projecting superciliary shield conspicuous, arched, but not very prominent. Tail shorter than wing, the feathers hard and stiff. Primaries very strong, elongated, tapering rapidly toward their points; only the first or first and second with their inner webs emarginated, the cutting being angular, and near the end of the

quill. Tarsus never with a single series of transverse scutellæ either in front or behind; middle toe very long."

SUBGENUS HIEROFALCO CUVIER.

"One primary only with inner web emarginated; first to second longest; first longer than fourth. Tarsus longer than middle toe, and feathered far below the knee; first quill shorter than third. Coloration of the sexes alike; old and young slightly different in pattern and tints. Size large."

Falco rusticolus LINN.

GRAY GYRFALCON.

An accidental winter visitant; captured near Manhattan, December 1st, 1880, by A. L. Runyan, and reported to me by Dr. C. P. Blachly, who has the bird (a fine specimen) in his collection.

B. 12. R. 412*a*. C. 500. G. 190, 130. U. 354.

HABITAT. Northern North America, including Iceland, and southern Greenland; south in winter to the northern borders of the United States, also extreme northern portion of Europe (except Scandinavia) and Asia.

SP. CHAR. Lower tail coverts always more or less marked with dusky; upper parts with little, if any, white (except sometimes on top of head and hind-neck). Adult with upper parts banded with dusky and bluish gray (sometimes uniform dusky anteriorly), the flanks and thighs barred, banded or transversely spotted with dusky. Young without transverse bars on upper parts (except sometimes on tail), and lower parts with all the markings longitudinal. *Lighter colored*: Top of head much streaked with white, often with white prevailing, the lighter tail bands usually whitish and nearly as broad as the darker interspaces. *Adult*: With anterior upper parts everywhere more or less distinctly barred with very pale grayish, grayish white or buffy whitish, these lighter bars sometimes nearly equal in width to the darker ones; darker and lighter bands on tail usually very sharply contrasted, the former often slate gray, the latter pale ash gray or dull whitish; flanks and thighs never very heavily banded or spotted with slaty, but always more or less marked with this color. *Young*: Dark stripes of lower parts usually decidedly narrower than white interspaces; upper parts in general usually much spotted with whitish or light buffy, in addition to the lighter margins (often conspicuous) to the feathers; outer webs of quills more or less distinctly spotted with whitish toward base. *Male*: Length, about 20.00 to 21.00; wing, 13.40 to 15.00 (14.10); tail, 8.00 to 9.30 (8.51); culmen, .88 to .98 (.90); tarsus, 2.10 to 2.65 (2.40); middle toe, 1.80 to 2.20 (1.96). *Female*: Length, about 22.00 to 24.50; wing, 15.25 to 16.50 (15.76); tail, 9.10 to 10.50 (9.72); culmen, .95 to 1.10 (1.01); tarsus, 2.30 to 2.60 (2.46); middle toe, 1.98 to 2.15 (2.08). Eggs, 2.37x1.72. (*Ridgway*.)

I have never had the pleasure of meeting with this large, handsome species. In flight they are said to be even swifter

than the Duck Hawk, and for courage and dash they stand pre-eminently at the head of the birds of prey. They are not uncommon throughout their northern range. Mr. E. W. Nelson says:

“Throughout all Alaska, from the Aleutian Islands north, both along the coast and through the interior, extending from Behring Straits across the northern portion of British America, the present Falcon is the commonest bird of prey. It was observed by Murdock, at Point Barrow, though it was not common. It frequents the vicinity of cliffs and rocky points about the seacoast, or the rocky ravines of the interior, during the breeding season, and the remainder of the year, especially in fall, it is found wandering over the country everywhere that food can be obtained; it is especially numerous during the migration of the Ptarmigan along the seacoast.

“In Greenland, Holboll found the young moulting throughout the winter; but none of my winter specimens show signs of moulting, and the young specimens in my collection, taken in April and May, still in a striped condition, show no signs of change. MacFarlane found numerous nests of this bird on the Anderson River, nearly all of which were placed in trees, and the eggs were laid in May, the earliest being upon the 10th. Along the seacoast, in the vicinity of St. Michael's, it breeds rarely, choosing rocky cliffs facing the sea. Along the Lower Yukon and Kuskokwim Rivers, in winter, it is numerous, and finds an abundance of Ptarmigan, upon which it preys. At this season it is frequently seen perching on a stout branch of a tree overhanging the river bank, and I have seen it, on several occasions, allow a train of dog sledges to pass within forty to fifty yards, only noticing their presence by slowly turning its head. It was seen in the vicinity of Behring Straits and around the shore of Norton Sound, during the cruise of the *Corwin*, in the summer of 1881, as also upon the northeast shore of Siberia, in the vicinity of East Cape and Plover Bay. Swinhoe records specimens of this bird from Pekin, China, and it also occurs in the Kurile Islands. At St. Michael's, on May 1st, 1881, a specimen of this bird was brought me by a native woman, who had

taken it from one of her Ptarmigan snares, where it was caught just after having robbed another snare of a Ptarmigan. The iris of a specimen, taken on October 6th, 1880, was dark hazel, and the large scales on the upper surface of the feet and tarsus were a greenish yellow, the rest of the feet and tarsus being livid greenish; the bill was horn blue. Another specimen, taken October 12th, had the cere, like the tarsus, livid bluish green; the bill was dark horn color at the tip and bluish green at the base."

Their nests are placed upon rocky cliffs, also in tall trees; they are quite bulky, and composed of sticks and withered twigs, and lined with mosses, grasses and other soft substances. Eggs two to three; 2.27x1.76; ground color a dirty yellowish white, sprinkled, spotted and blotched with varying shades of brown; some sparingly marked, others thickly, so as to obscure the ground color; in form, rounded oval.

Falco mexicanus SCHLEG.

PRAIRIE FALCON.

PLATE XVIII.

Resident; rare in the eastern, but not uncommon in the western parts of the State.

B. 10. R. 413. C. 502. G. 191, 131. U. 355.

HABITAT. Western United States; east to the eastern borders of the Great Plains (occasionally to Illinois); south into Mexico.

SP. CHAR. Top of head grayish brown, streaked with dusky, outer webs of tail feathers without distinct lighter spots (usually quite plain), and outer webs or quills without trace of spots; secondaries with lighter spots on outer webs under parts and nuchal collar white, the flanks heavily spotted or blotched with dusky, the under tail coverts sparsely spotted with same. *Adult male*: Above, pale grayish brown (usually tinged more or less with rusty), indistinctly but broadly barred with pale clay color or dark grayish buffy anteriorly and pale bluish gray posteriorly. *Adult (?) female*: Above grayish brown, without distinct or well-defined lighter bars, but feathers margined with pale rusty brown or dull whitish, both the ground colors and these edgings paler on posterior portions; tail tipped with buffy whitish, the feathers edged with a paler tint of the ground color. *Young (both sexes)*: Above grayish brown, the feathers distinctly margined with light rusty; lower parts pale buffy or buffy whitish, with broader dusky streaks, the dusky flank patch larger and more uniform than in the adult, and the axillars unbroken dusky. *Young, in first summer*: Similar to the preceding stage, but color above darker, with rusty margins to feathers more dis-

tinnet, the ground color of the lower parts light ochraceous or creamy buff; (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	17.00	39.50	12.00	7.25	2.00	.70	.22
Female . . .	18.50	43.00	13.50	8.20	2.10	.85	.22

Iris brown; bill horn blue, with base of lower yellow; legs, feet and lores yellow; claws black.

This species inhabits the open prairies. A brave dashing bird, that in spirit is unsurpassed, except it be by the Gyrfalcons. It is rather wild and solitary. In flight it progresses swiftly, by quick, powerful strokes of its wings; often stopping in its flight to hover as it sights its prey beneath, descending upon the same with partially-closed wings, swift as an arrow; or gives chase, turning and tacking easily and with a speed that the swiftest of flyers cannot escape. The birds are often seen perched upon a knoll, lone tree, or telegraph pole. In alighting upon any high object, they swoop down nearly to the ground, and then gracefully ascend to the top or desired height. They often attack game much larger than themselves, killing with ease jack rabbits, Ducks, Prairie Hens, etc. They are very destructive to the smaller birds, especially those that go in flocks. I saw one dart from a telegraph pole into a flock of chestnut-colored Longspurs, and knock down four of the birds at a single dash, killing three and winging the other. (As he returned to pick up the slain, I dropped him beside them.) They also feed largely upon ground squirrels, mice, lizards, etc.

Their nests are usually placed on the sides of steep, rocky cliffs, made rudely of sticks and lined with grasses. Eggs two to five. In Capt. B. F. Goss's collection are two eggs taken April 28th, 1880, at Marysville, Mo., from a nest in a tree, thirty-five feet from the ground; notes fail to show whether the nest was in the forks of the branches or in a hole in the tree, but doubtless in the latter, as the habits of these birds are similar to *F. peregrinus anatum*; dimensions of the eggs, 2.05x1.70, 2.12x1.65; grayish white, spotted and blotched with various shades of reddish brown, running together so as to obscure the ground color of one of the eggs, and partially of the other; in form, rounded oval.

SUBGENUS RHYNCHODON NITZSCH.

Tarsus not decidedly longer than middle toe without claw, often shorter; first quill longer than third; first and second quills equal and longest; second with inner web slightly sinuated near tip; adult and young very different in color, the latter with stripes instead of bars beneath, and without bars on upper parts. (*Ridgway*.)

Falco peregrinus anatum (BONAP.).

DUCK HAWK.

PLATE XVIII.

Resident; not uncommon in the eastern part of the State. Begins laying early in March.

B. 5. 6. R. 414. C. 503. G. 192. 132. U. 356.

HABITAT. The whole of America, south as far at least as Chili; eastern Asia.

SP. CHAR. "*Adult*: Upper parts dark bluish plumbeous, approaching black anteriorly, but on rump and upper tail coverts becoming fine bluish plumbeous ash. On the head and neck the continuous plumbeous black covers all the former except the chin and throat, and the back portion of the latter; an invasion or indentation of the white of the lower parts up behind the ear coverts separating that of the cheeks from the posterior black, throwing the former into a prominent angular patch; forehead and lores grayish. All the feathers above (posterior to the nape) with transverse bars of plumbeous black, these most sharply defined posteriorly, where the plumbeous is lightest. Tail black, more plumbeous basally, very faintly paler at the tip, and showing ten or eleven transverse narrow bands of plumbeous, these most distinct anteriorly; the bars are clearest on inner webs. Alula, primary and secondary coverts, secondaries and primaries, uniform plumbeous black, narrowly whitish on terminal margin, most observable on secondary and inner primaries. Lower parts white, tinged with delicate cream color, the deepest on the abdomen; sides and tibia tinged with bluish. Chin, throat and jugulum immaculate; the breast, however, with faint longitudinal shaft streaks of black; sides, flanks and tibiae distinctly barred transversely with black, about four bars being on each feather; on the lower tail coverts they are narrower and more distant; on the abdomen the markings are in the form of circular spots; anal region barred transversely. Lining of the wing (including all the under coverts) white tinged with blue, and barred like the sides; under surface of primaries slaty, with elliptical spots or bars of creamy white on inner webs, twelve on the longest. *Young*: Above plumbeous black, tail more slaty. Every feather broadly bordered terminally with dull cinnamon; these crescentic bars becoming gradually bordered posteriorly, narrower and more obsolete on the head above. Tail distinctly tipped with pale cinnamon, the inner webs of feathers with obsolete transverse spots of the same, these touching neither the edge nor the shaft; scarcely apparent indications of corresponding spots on outer webs. Region round the eye and broad 'moustache' across the cheeks pure black, the latter more conspicuous than in the older stages, being cut off posteriorly by the extension of the cream color of the

neck nearly to the eye. A broad stripe of pale ochraceous running from above the ear coverts back to the occiput, where the two of opposite sides nearly meet. Lower parts purplish cream color, or rosy ochraceous white, deepest posteriorly; jugulum, breast, sides, flanks and tibiae with longitudinal stripes of plumbeous black, these broadest on flanks and abdomen, and somewhat sagittate on the tibiae; lower tail coverts with distant transverse bars. Lining of the wing like the sides, but the markings more transverse; inner web of longest primary with nine transverse purplish ochre spots. Basal half of bill pale bluish white, cere rather darker; terminal half (rather abruptly) slate color, the tip deepening into black; iris very dark vivid vandyke brown; naked orbital space pale bluish white, with a slight greenish tint; tarsi and toes lemon yellow, with a slight green cast; claws jet black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	17.50	41.00	13.25	6.50	1.85	.90	.30
Female . . .	19.73	43.50	14.50	7.50	1.90	.95	.30

Iris brown; bill horn blue, light green at base; cere and eyelids greenish yellow; legs and feet lemon yellow; claws black.

This widely-distributed species inhabits the timbered lands along the streams and ponds of water. In actions and general make-up, they are very similar to the Prairie Falcon, and are, I think, fully as swift and fearless, but more easily tamed, and, for this reason, a great favorite in the chivalrous days of falconry. I have had a very good opportunity to observe the birds in the Neosho valley, Kansas, where, for several years, I found them breeding. I have often seen them strike down, with ease, the swiftest of Ducks—the Wood Duck a favorite. Blackbirds also fall an easy prey, sometimes two or three out of a flock being killed at a single dash. They are very noisy while mating, but silent during incubation, the pair sharing alike in the duties of hatching and rearing their young. The males, as far as noticed, sit upon the eggs in the fore part of the day, the females during the latter part of each day, each, while off duty, occasionally feeding the other, but putting in a good share of the time as sentinels, perched upon a favorite dead limb near the nest, ready to give the alarm in case of approaching danger. At such times they scold rapidly, and manifest great anxiety and fear, circling overhead, occasionally alighting, and taking good care to keep out of reach. The fear of man is not without cause, for our hunters never lose an opportunity to shoot at

them, knowing how destructive they are to the water fowls found in the sloughs along the river bottoms.

They nest in natural cavities in trees and on the sides of rocky cliffs. Nest without lining. Eggs three or four, 2.25 x 1.70; grayish ochre, spotted and blotched with reddish and dark chocolate brown, running somewhat together, thickest about larger end; in form, subspherical to rounded oval.

SUBGENUS *ÆSALON* KAUP.

Two outer quills with inner webs emarginated near tips; first quill shorter than fourth. Tarsus not decidedly longer than middle toe; basal segment of toes covered with small hexagonal or roundish scales. *Adult males*: Bluish gray above, with blackish shaft streaks; hindneck spotted or mixed with whitish and buffy or ochraceous; quills dusky; tail crossed by a greater or less number of blackish bands, and tipped with whitish; lower parts whitish, buffy or light rusty, striped with brownish or dusky. *Adult females*: Brownish above, the tail usually with a greater or less number of lighter (usually narrow) bands; top of head streaked with blackish, and feathers of back and rump with shaft streaks of the same; lower parts much as in the male, but without rusty tinge. *Young (both sexes)*: Much like adult female, but darker, or else much tinged above with ochraceous or rusty. (*Ridgway.*)

Falco columbarius LINN.

PIGEON HAWK.

PLATE XVIII.

Migratory; rare. Arrive in October; leave, usually, by the first of April. I have a male in the "Goss Ornithological Collection" that I shot at Neosho Falls, June 10th, 1878.

B. 7. R. 417. C. 505. G. 193, 133. U. 357.

HABITAT. The whole of North America; breeding chiefly north of the United States; south in winter to the West Indies and northern South America.

SP. CHAR. "*Adult male*: Above, cinereous, varying in shade, but generally of a slaty bluish cast; each feather with a distinct shaft streak of black, these lines most conspicuous on the head above. Tail with a very broad subterminal band of black, about an inch in width; there are indications of three other bands, their continuity and distinction varying with the individual, but generally quite conspicuous, and each about half the width of the terminal one; the subterminal black band is succeeded by a terminal one of white, of about three-sixteenths of an inch in width, sometimes broader; on the lateral feathers the black bands are always conspicuous, being in form of transverse oblong spots, crossing the shaft, but less extended on the outer web, which is often immaculate except at the end, the broad terminal band always extending to the edge of

the feathers. Primaries dusky black, margined terminally more or less distinctly with whitish (sometimes fading on the edge only); on the inner web is a series of about eight transverse oval spots of white, and generally corresponding to these are indications of bluish ashy spots on the outer web. Beneath white, this purest on the throat, which is immaculate; there is generally a more or less strong tinge of fulvous beneath, this always prevalent on the tibiae, and on a distinct collar extending round the nape, interrupting the blue above; the tibiae frequently incline to ochraceous rufous. Lateral portions of the head with fine streaks of dusky, these thickest on upper edge of the ear coverts, leaving a distinct whitish superciliary streak, those of opposite sides meeting on the forehead. Breast, upper part of the abdomen, sides and flanks with longitudinal stripes of umber, each with a shaft streak of black; on the flanks their shape is modified, here taking the form of spots running in chain-like series; tibiae with narrower and darker streaks; lower tail coverts with narrow central streaks like those on the tibiae. Frequently there is a strong bluish shade on flanks and lower tail coverts, sometimes replacing the brown of the spots on former, and clouding in similar form the latter. *Adult female:* Pattern of coloration as in the male, but the colors different. The blue above replaced by dark umber brown with a plumbeous cast, and showing more or less distinct darker shaft lines; these on the head above very broad, giving a streaked appearance; white spots on inner webs of primaries more ochraceous than in the male. Tail dark plumbeous brown, shading into blackish toward end, with five rather narrow ochraceous or soiled white bars, the first of which is concealed by the upper coverts, the last terminal. White beneath, less tinged with reddish than in the male, the tibiae not different from the other portions; markings beneath as in the male. *Young:* Above, plumbeous brown, tinged with fulvous on head, and more or less washed with the same on the rump; frequently the feathers of the back, rump, scapulars and wings pass into a reddish tinge at the edge; this color is, however, always prevalent on the head, which is conspicuously streaked with dusky. Tail plumbeous dusky, darker terminally, with five regular light bars, those toward the base ashy; as they approach the end becoming more ochraceous; these bars are more continuous and regular than in the adult female, and are even conspicuous on the middle feathers. Primaries dusky, passing on edge (terminally) into lighter; spots on the inner webs broader than in the female, and pinkish ochre; outer webs with less conspicuous corresponding spots of the same. Beneath soft ochraceous; spots as in adult female, but less sharply defined; tibiae not darker than abdomen."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	11.00	23.50	7.60	4.70	1.35	.50	.15
Female . . .	12.50	26.00	8.50	5.75	1.40	.55	.20

Iris dark brown; bill black, blue at base; cere and eyelids greenish yellow; legs and feet yellow; claws black.

This spirited little Hawk is one of the most common birds of prey within its northern range. It feeds chiefly upon small birds, but often attacks birds much larger than itself (killing

readily the Passenger Pigeon, one of the swiftest of birds). It seldom watches from a perch, or hovers in the air as it sights its prey, but as a rule darts rapidly through the thickets, and over the open grounds, giving chase to the birds startled in its course. It also feeds on squirrels, mice, etc. In flight, like others of the Falcon family, it strikes rapidly with its wings, never sailing except for a short distance.

In the month of July, 1880, I found several of their nests on the Magdalen Islands, containing from two to four young birds, nearly full grown. The nests were placed in fir trees, upon branches near the body of the tree, and about thirty feet from the ground. They were made of sticks and twigs, and lined with grasses and a few feathers; they were rather large for the birds and had the appearance of being old, deserted nests of the common Crow. The birds are also said to nest in holes in trees and cavities in rocks. Eggs two to four, 1.56x1.23; ground color creamy white, speckled, spotted and blotched with varying shades of raw umber to rusty brown, thickest around the larger end; in form, rather oval. A set of two eggs, collected May 26th, 1882, at Helena, Montana, measure only, 1.50x1.21, 1.52x1.20.

Falco richardsonii RIDGW.

RICHARDSON'S MERLIN.

PLATE XIX.

A rare visitant in the eastern, not common in the western, part of the State.

B. —. R. 418. C. 507. G. 194, 134. U. 358.

HABITAT. Interior of North America, from the Mississippi River to the Pacific coast, and from the Arctic regions to Texas and Arizona, probably into Mexico.

SP. CHAR. Middle tail feathers crossed by (all together) five darker and six lighter bands; outer webs of quills distinctly spotted with light grayish in adult male, and buffy or ochraceous in adult female and young, and general plumage paler. *Adult male:* Above, pale bluish gray (top of head usually more or less tinged with light rusty or ochraceous); tail crossed on middle feathers by five blackish and six light bluish gray (or five bluish gray and one white terminal) bands, the lighter ones often clouded or mixed with white; outer webs of quills distinctly spotted with light grayish. *Adult female:* Above, rather light earthy brown, more or less distinctly barred or transversely spotted with a lighter shade;



PLATE XIX.

1. AMERICAN ROUGH-LEGGED HAWK, Male. 2. Female. 3. Male. (Owl, 101111). 4. RICHARDSON'S MERLIN, Male. 5. Female. 6. AMERICAN SPARROW HAWK, Male. 7. Female. 8. AMERICAN OSPREY, Male. 9. Female. 10. BARN OWL, Male. 11. Female.

tail crossed on middle feathers by six very distinct and entirely continuous narrow bands of buffy whitish; secondaries distinctly banded with ochraceous, and outer webs of quills distinctly spotted with a lighter tint of the same. *Young (both sexes)*: Similar to adult female, but more decidedly buffy below, and upper parts more or less tinged with rusty. (*Ridgway.*)

A pair in the "Goss Ornithological Collection" are, in dimensions:

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	11.20	23.50	7.50	5.00	1.30	.50	.18
Female . . .	13.00	26.00	8.75	6.00	1.40	.55	.20

Iris dark brown; bill horn blue, greenish at base; cere, legs and feet greenish to light lemon yellow; claws black.

This species, in habits and actions, is not noticeably different from the Pigeon Hawk, except that it prefers the more open grounds and prairies for its home. It flies with great ease and celerity, catching the bird it selects for its prey in a fair chase, following it in all its hopeless windings and turns. It also feeds largely upon the grasshoppers and lizards of the plains.

I have met with this bird in the mountains of Colorado during the breeding season, but failed to find them nesting, neither can I find any description of their nesting habits (presumably the same as the Pigeon Hawk). Mr. Ridgway, in his "Manual," says: "Eggs (single specimen), 1.52x1.22; buffy white, handsomely marbled and irregularly spotted with madder brown."

SUBGENUS TINNUNCULUS VIEILLOT.

"Two primaries with inner webs emarginated; first shorter than fourth.

"Coloration of the sexes very different in pattern and tints at all ages; old and young alike. Scutellæ of the toes and tarsus interrupted at the digito-tarsal joint; tarsus much longer than middle toe. Bill small, the cere on top less than one-fourth the culmen."

Falco sparverius LINN.

AMERICAN SPARROW HAWK.

PLATE XIX.

Resident; abundant. Begin laying the first of April.

B. 13. R. 420, 420a. C. 508, 509. G. 195, 135. U. 360.

HABITAT. The whole of temperate North America; south in winter to northern South America.

SP. CHAR. "Adult male: Forehead, lateral and posterior regions of the vertex, occiput and wings, bluish ash. Vertex, nape, scapulars, interscapulars,

rump, upper tail coverts and tail, fine cinnamon-rufous; scapulars and back barred with black, the bars broadest and most conspicuous posteriorly. Tail tipped with white, and with a broad, sharply-defined subterminal zone of black, about one inch in width; lateral feathers with outer web, and terminal half of inner, ashy white, the latter with one or two distinct transverse spots anterior to the subterminal one; wing coverts with more or less conspicuous cordate spots of black, rather sparsely distributed; basal two-thirds of secondaries and whole of primaries deep black; the latter whitish around the terminal margin, and with nine transverse bands of white on inner web of longest (second), the white rather exceeding the black, the points of which do not reach the edge of the feather; lining of the wing white, with conspicuous cordate spots of black; front and superciliary region more hoary than the forehead, almost approaching white; whole lateral region of the head, with chin, throat and lower parts, white; the neck, breast and sides, however, with a deep tinge of ochraceous, the tint hardly approaching the depth of color seen on the nape; on the head there are (considering both sides) seven black spots; the first originating in front of the bare ante-orbital space (leaving the lores white), and extending in a stripe downward across the maxillæ, forming a conspicuous 'mustache,' the second crosses the tips of the ear coverts, in form of an oblong transverse spot; the third is smaller, situated as far behind the last as this, and is posterior to the 'mustache,' crossing the sides of the neck; the last is an odd nuchal spot separating the ash of the occiput from the rufous of the nape; breast and sides with circular or cordate spots of pure black, these varying in size, but generally larger on the sides; other lower parts immaculate. *Adult female:* Blue above confined to the head, which shows the rufous patch as in the male; entire upper parts rufous, lighter and less purplish than the male, everywhere barred with black; tail with twelve sharply-defined narrow bars of black; the subterminal broadest, and about three-eighths of an inch in width; longest primary with eleven transverse spaces of pale rufous nearly twice as wide as the dusky ones, which scarcely touch the edge; beneath yellowish white, paler than in the male, breast and sides with rusty longitudinal spots; head as in the male. *Young male:* Exactly like the adult male, but with the rufous darker, approaching to chestnut; spots beneath inclining to a tear-shaped form, and, though more numerous, are not so well defined as in the adult; also rufescent tinge beneath more general; blue of the wings with scarcely any spots; white terminal band of tail tinged with rufous; sometimes the two or three outer feathers are clouded with ash, and possess indication of bars, formed of irregular black spots. *Young female:* Generally like the adult, but with rufous above darker, approaching ferruginous; the bars everywhere broader, and purer black; rufous vertical patch streaked centrally with black; spots beneath larger, darker, approaching reddish umber."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	10.35	22.15	7.25	5.10	1.35	.40	.15
Female . . .	11.40	23.00	7.55	5.50	1.40	.45	.20

Iris brown; cere, edges of eyelids and lips orange; bill light blue; legs and feet yellow; claws black.

These little beauties are not as active or destructive as others of the Falcon tribe. Their flights are usually short and irregular, darting here and there, often hovering in a suspended manner for several moments at a time. During the summer months they occasionally kill the little birds, but feed chiefly upon mice, lizards, grasshoppers, crickets, etc., as they are so much easier to capture than the full-grown birds, and to which they rarely turn their attention, until the cold weather drives the other forms of life, upon which they so largely feed, into their winter beds. The bird that suffers most outside of the Horned Larks and Longspurs, is the Tree Sparrow, as it prefers the hedges and small thickets upon the prairies, instead of the wooded lands, for its sheltered home; its food in all such cases being upon the open lands, and whenever there is any snow upon the ground, it drifts against the hedges, and forces the little birds to seek the bare spots, quite a distance away, for the seeds on or fallen from the weeds. Here it is that the Hawks successfully get in their work, by darting from a perch and striking the Sparrow, either upon the ground or before it can reach its hiding place.

Their nests are placed in large Woodpecker holes, and natural cavities in trees, usually without lining; occasionally a few leaves or mosses. Eggs four to six, 1.33x1.12; buffy white, speckled, spotted and blotched with light and dark brown—the markings vary greatly in size and number, often confluent, and so thick around the larger end as to obscure the ground color; in form, rounded oval.

SUBFAMILY PANDIONINÆ. OSPREYS.

“Outer toe reversible, and plumage without aftershafts.”

GENUS PANDION SAVIGNY.

“Bill inflated, the cere depressed below the arched culmen; end of bill much developed, forming a strong, pendent hook. Anterior edge of nostril touching edge of cere. Whole of tarsus and toes (except terminal joint) covered with rough, somewhat imbricated, projecting scales. Outer toe versatile; all the claws of equal length. In their shape also they are peculiar; they contract in thickness to their lower side, where they are much narrower than on top, as well as perfectly smooth and rounded; the middle claw has the usual sharp lateral ridge, but it is not very distinct. All the toes perfectly free. Tibiæ not plumed, but covered compactly with short feathers, these reaching down the

front of the tarsus below the knee, and terminating in an angle. Primary coverts hard, stiff, and acuminate, almost so as the quills themselves; third quill longest; first longer than fifth; second, third and fourth sinuated on outer webs; outer three deeply emarginated, the fourth sinuated, on inner webs."

***Pandion haliaetus carolinensis* (Gmel.).**

AMERICAN OSPREY.

PLATE XIX.

Summer resident; not uncommon. Arrive the first of April; begin laying the last of April; leave in October.

B. 44. R. 425. C. 530. G. 196. 136. U. 364.

HABITAT. North America in general, from Hudson's Bay and Alaska; south into South America.

SP. CHAR. *Adult male:* Above, plain dusky grayish brown, the tail more grayish, narrowly tipped with white, and crossed by about six or seven narrow bands of dusky; head, neck and entire lower parts pure white, the chest sometimes slightly blotched or spotted with brown, but usually immaculate; sides of head with a dusky stripe from lores across ear coverts, and top of head usually more or less marked with dusky. *Adult female:* Similar to the male, but chest much more heavily spotted or blotched with brown (never immaculate). *Young:* Above, blackish brown, each feather distinctly bordered terminally with white or buffy; otherwise like adult, the sexes differing in the same manner. *Downy young:* Dull sooty grayish or dusky above, more or less mixed or tinged with rusty or fulvous, relieved by a broad whitish stripe down middle of back and rump; a dusky stripe on sides of head, and three others on top of head, separated by whitish stripes; hinder portion of wing whitish, anterior portion dusky; lower parts dull whitish, the chest brownish or dusky. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	22.25	63.00	18.50	8.25	2.10	1.25	.30
Female . . .	24.00	66.50	20.00	9.50	2.20	1.35	.30

Iris yellow; bill, cere and claws bluish black; legs and feet pale blue, sometimes with a greenish hue.

This widely-distributed species is quite common along the seacoasts and shores of inland waters, but is never met with far away, except during migration, as it wholly feeds upon fish, which it swoops down upon and captures at or near the surface of the water, never feeding upon the dead fish that wash up on the shores, nor will it stoop to pick up one accidentally dropped from its talons. A peaceably-disposed bird, that does not harm or disturb other birds, and the little ones appear to look upon it as a friend. As evidence of this, they are often to be seen

perched beside them, and the Purple Grackle occasionally build their nests in the interstices of the outer sticks that lay the foundation of the Osprey's nest, and there hatch and rear their young in safety.

The birds are quite social in habits, often assembling in small flocks, and at such times I have seen them attack and drive away from their fishing grounds the Bald Eagle, that occasionally robs them of their prey. Wilson gives the following interesting description of their flights and fishing habits:

“The flight of the Fish Hawk (American Osprey), his manœuvres while in search of fish, and his manner of seizing his prey, are deserving of particular notice. In leaving the nest he usually flies direct till he comes to the sea, then sails around in easy, curving lines, turning sometimes in the air as on a pivot, apparently without the least exertion, rarely moving his wings, his legs extended in a straight line behind, and his remarkable length and curvature, or bend of wing, distinguishing him from all other Hawks. The height at which he thus elegantly glides is various, from one hundred to one hundred and fifty and two hundred feet, sometimes much higher, all the while calmly reconnoitering the face of the deep below. Suddenly he is seen to check his course, as if struck by a particular object, which he seems to survey for a few moments with such steadiness that he appears fixed in the air, flapping his wings. This object, however, he abandons, or rather the fish he had in his eye has disappeared, and he is again seen sailing around as before. Now his attention is again arrested, and he descends with great rapidity, but ere he reaches the surface shoots off on another course, as if ashamed that a second victim has escaped him. He now sails at a short height above the surface, and by a zigzag descent, and, without seeming to dip his feet in the water, seizes a fish, which, after carrying a short distance, he probably drops, or yields up to the Bald Eagle, and again ascends by easy spiral circles to the higher regions of air, where he glides about in all the ease and majesty of his species. At once, from this sublime aerial height, he descends like a perpendicular torrent, plunging into the sea with a loud, rushing sound,

•

and with the certainty of a rifle. In a few moments he emerges, bearing in his claws his struggling prey, which he always carries head foremost, and, having risen a few feet above the surface, shakes himself as a water spaniel would do, and directs his heavy, laborious course directly for the land."

Their nests are placed in the tops of trees along the banks and old channels of the rivers; are huge structures, made of large sticks interwoven with cornstalks and weeds, and lined with grasses. Eggs two to four, 2.50x1.75; buff white, spotted and blotched with umber and reddish brown running together, thickest at larger end; also a few markings of lilac; in form, elliptical.

SUBORDER STRIGES. OWLS.

Eyes directed forward, surrounded by disks of radiating feathers; cere concealed by loreal and frontal, bristle-like feathers; outer toe reversible. (*Ridgway*.)

FAMILY STRIGIDÆ. BARN OWLS.

Inner toe as long as middle toe; inner edge of middle claw pectinated; feathers on hinder part of tarsus recurved or pointed upward; first quill longer than third, none of the quills with inner webs sinuated or emarginated. (*Ridgway*.)

GENUS **STRIX** LINNÆUS.

"Size medium. No ear tufts; facial ruff entirely continuous, very conspicuous. Wing very long, the first or second quills longest, and all without emargination. Tail short, emarginated. Bill elongated, compressed, regularly curved; top of the cere nearly equal to the culmen, straight and somewhat depressed. Nostril open, oval, nearly horizontal. Eyes very small. Tarsus nearly twice as long as the middle toe, densely clothed with soft, short feathers, those on the posterior face inclined upwards; toes scantily bristled; claws extremely sharp and long, the middle one with its inner edge pectinated. Ear conch nearly as long as the height of the head, with an anterior operculum, which does not extend its full length."

Strix pratincola BONAP.

AMERICAN BARN OWL.

PLATE XIX.

Resident; quite common in the southern part of the State. Begin laying in April.

B. 47. R. 394. C. 461. G. 181, 137. U. 365.

HABITAT. The United States generally; rare in northern portion; southward through Mexico.

SP. CHAR. "*Average plumage:* Ground color of the upper parts bright orange ochraceous; this overlaid in cloudings, on nearly the whole of the surface, with a delicate mottling of blackish and white; the mottlings continuous on the back and inner scapulars, and on the ends of the primaries more faint, while along their edges it is more in the form of fine dusky dots, thickly sprinkled. Each feather of the mottled surface (excepting the secondaries and primaries) has a medial dash of black, enclosing a roundish or cordate spot of white near the end of the feather; on the secondaries and primaries, the mottling is condensed into obsolete transverse bands, which are about four in number on the former and five on the latter; primary coverts deeper orange rufous than the other portions, the mottling principally at their ends, Tail orange ochraceous, finely mottled—most densely terminally—with dusky, fading into whitish at the tip, and crossed by about five distinct bands of mottled dusky. Face white, tinged with wine red; an ante-orbital spot of dark claret brown, this narrowly surrounding the eye; facial circle, from forehead down to the ears (behind which it is white for an inch or so), soft orange ochraceous, similar to the ground color of the upper parts; the lower half (from ears across the throat) deeper ochraceous, the tips of the feathers blackish, the latter sometimes predominating. Lower parts snowy white, but this more or less overlaid with a tinge of fine orange ochraceous, lighter than the tints of the upper parts, and (excepting on the jugulum, anal region and crissum) with numerous minute but distinct specks of black; under surface of wings delicate yellowish white, the lining sparsely sprinkled with black dots; inner webs of primaries with transverse bars of mottled dusky near their ends."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	15.50	44.50	12.75	5.50	3.00	.90	.50
Female . . .	16.25	46.00	13.50	6.00	3.10	.90	.50

Iris dark brown to bluish black; bill dull pearl white; feet light brownish yellow; claws brown.

These birds, from their peculiar facial disk, are known as the "Baboon" or "Monkey-faced" Owl. They are rarely met with at or north of latitude 42°, but are not uncommon south, increasing in numbers southward and westward. In southern California they are quite abundant. In habits they are nocturnal, but if flushed during the day fly without hesitation, and, as their eyes are rather small for night Owls, may see at all times passably well; though I have never noticed one flying about of its own accord, or hunting, until after twilight, when they leave their secluded retreats, and with noiseless wings actively course about over the ground in search of food, which consists chiefly of mice, rats, moles, gophers, rabbits, bats and nocturnal insects. They occasionally kill small birds, but in their stomachs,

or ejected "pellets" of indigestible matter, a feather is seldom found, and they are said to have been found in Dove cots with Doves that flew in and out without manifesting any fear or alarm. In such cases I think the Owls have been in the habit of entering the cots at dark, gorged with mice—their more natural food—and as they remain quiet during the day, the Doves had become accustomed to their presence. The birds are, as a rule, rather silent. I think they never hoot, but occasionally utter—especially while on the wing—a harsh, horrible scream; and when disturbed in their retreats, they hiss, and make a loud snoring noise.

Their nests are placed in cavities of trees, burrows in the sides of banks, crevices in rocks, and nooks of buildings. Eggs four to ten, laid upon the debris, pellets of hair, and other remains of the birds' food; cream white; occasionally an egg will show markings of pale drab; in form, ovate. A set of six eggs, taken May 16th, 1882, from a hole about three feet deep, in the bank of the Arkansas River, in Texas, measure: 1.63 x 1.29, 1.68 x 1.28, 1.67 x 1.26, 1.68 x 1.30, 1.68 x 1.28, 1.72 x 1.29.

FAMILY BUBONIDÆ. HORNED OWLS, ETC.

Inner toe decidedly shorter than middle toe; inner edge of inner claw not pectinated; feathers on hinder part of tarsus (if present) pointed downward; first quill shorter than third, and at least one (one to six) quill with inner web sinuated or emarginated. (*Ridgway.*)

GENUS ASIO BRISSON.

"Size medium. Ear tufts well developed or rudimentary; head small; eyes small. Cere much arched, its length more than the chord of the culmen. Bill weak, compressed. Only the first (or first and second) outer primary with its inner web emarginated. Tail about half the wing, rounded. Ear conch very large, gill-like, about as long as the height of the skull, with an anterior operculum, which extends its full length, and bordered posteriorly by a raised membrane; the two ears asymmetrical."

Asio wilsonianus (LESS.).

AMERICAN LONG-EARED OWL.

PLATE XX.

Resident; quite common. Begin laying in April.

B. 51. R. 395. C. 472. G. 182, 138. U. 366.

HABITAT. The whole of temperate North America; south into Mexico.

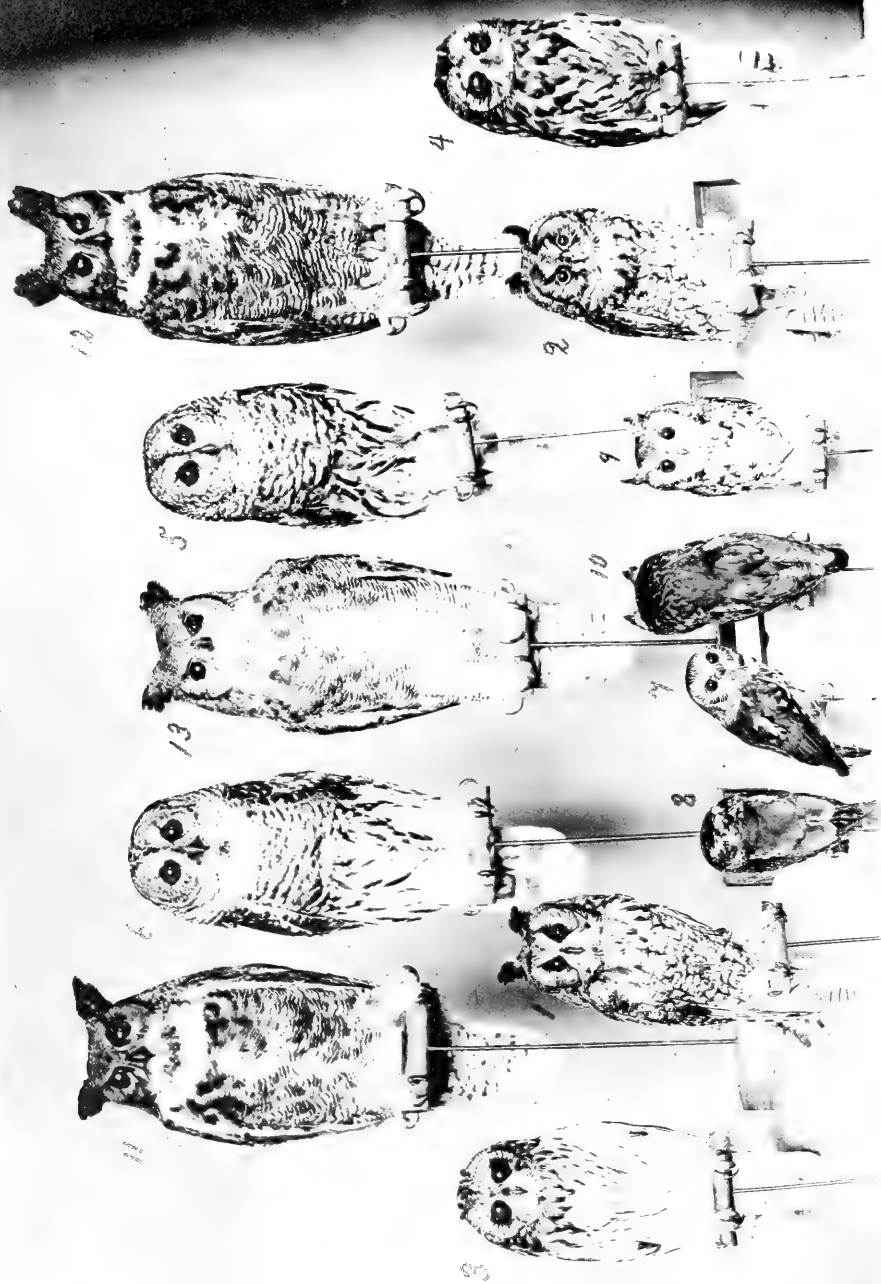


PLATE XX.

1. AMERICAN LONG-EARED OWL; Male. 2. Female. 3. SHORT-EARED OWL; Male. 4. Female. 5. BARRED OWL; Male. 6. Female. 7. SAW WHET OWL; Female. 8. Female. 9. SCREECH OWL; Female. 10. Female. 11. GREAT HORNED OWL; Male. 12. Female. 13. WESTERN HORNED OWL; Female.

SP. CHAR. "*Adult*: Upper surface transversely mottled with blackish brown and grayish white, the former predominating, especially on the dorsal region; feathers of the nape and wings (only) ochraceous beneath the surface, lower scapulars with a few obsolete spots of white on inner webs. Primary coverts dusky, with transverse series of dark mottled grayish spots, these becoming somewhat ochraceous basally; ground color of the primaries grayish, this especially prevalent on the inner quills; the basal third (or less) of all are ochraceous; this decreasing in extent on inner feathers; the grayish tint is everywhere finely mottled transversely with dusky, but the ochraceous is plain; primaries crossed by a series of about seven quadrate blackish brown spots, these anteriorly about as wide as the intervening yellowish or mottled grayish; the interval between the primary coverts to the first of these spots is about .80 to 1.00 inch on the fourth quill—the spots on the inner and outer feathers approaching the coverts, or even underlying them; the inner primaries—or, in fact, the general exposed grayish surface—has much narrower bars of dusky. Ground color of the wings like the back, this growing paler on outer feathers, and becoming ochraceous basally; the tip approaching whitish; secondaries crossed by nine or ten narrow bands of dusky. Ear tufts, with the lateral portion of each web, ochraceous; this becoming white, somewhat variegated with black, toward the end of the inner webs, on which the ochraceous is broadest; medial portion clear, unvariegated black. Forehead and postocular disk minutely speckled with blackish and white; facial circle continuous brownish black, becoming broken into a variegated collar across the throat. 'Eyebrows' and lores grayish white; eye surrounded with blackish, this broadest anteriorly above and below, the posterior half being like the ear coverts. Face plain ochraceous; chin and upper part of the throat immaculate white, ground color below pale ochraceous, the exposed surface of the feathers, however, white; breast with broad longitudinal blotches of clear dark brown, these medial on the feathers; sides and flanks, each feather with a medial stripe, crossed by a broad or broader transverse bars of blackish brown; abdomen, tibial plumes, and legs plain ochraceous, becoming nearly white on lower part of tarsus and on the toes; tibial plumes with a few sagittate marks of brownish; lower tail coverts each having a medial sagittate mark of dusky, this continuing along the shaft, forking toward the base. Lining of the wing plain pale ochraceous; inner primary coverts blackish brown, forming a conspicuous spot."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	14.00	36.25	11.50	6.00	1.25	.65	.35
Female . . .	15.00	37.75	12.00	6.25	1.30	.75	.35

Iris yellow; bill and claws brownish to bluish black.

This species appears to be rather evenly distributed throughout its range, and is one of the most common Owls in the United States; but being strictly nocturnal, is seldom noticed. It inhabits the scrubby thickets and underbrush skirting the streams, and I have flushed the birds in tall, rank growth of reeds and grasses. Unless suddenly startled they seldom take wing, pre-

ferring to escape by hopping noiselessly away and hiding in the thick growths surrounding them. They feed chiefly upon mice and other small nocturnal rodents, also insects; and occasionally birds, but the latter are not so easily found, and do not appear to be their natural prey.

Their nests are placed in trees and bushes; a coarse, bulky structure made of sticks, and sparingly lined with grasses or strips of bark and feathers; often in remodeled Hawks' and Crows' nests. Eggs four to six, 1.63x1.30; white; in form, subspherical.

***Asio accipitrinus* (PALL.).**

SHORT-EARED OWL.

PLATE XX.

Resident; common. Begin laying the last of April to first of May.

D. 52. R. 396. C. 473. G. 183, 139. U. 367.

HABITAT. The entire continent of America, and nearly throughout the eastern hemisphere.

SP. CHAR. "*Adult*: Ground color of the head, neck, back, scapulars, rump and lower parts pale ochraceous; each feather (except on the rump) with a medial longitudinal stripe of blackish brown—these broadest on the scapulars; on the back, nape, occiput and jugulum the two colors about equal; on the lower parts the stripes grow narrower posteriorly, those on the abdomen and sides being in the form of narrow lines. The flanks, legs and anal region and lower tail coverts are always perfectly immaculate; the legs most deeply ochraceous, the lower tail coverts nearly pure white. The rump has obsolete crescentic marks of brownish. The wings are variegated with the general dusky and ochraceous tints, but the markings are more irregular; the yellowish, in form of indentations or confluent spots, approaching the shafts from the edge—broadest on the outer webs. Secondaries crossed by about five bands of ochraceous, the last terminal; primary coverts plain blackish brown, with one or two poorly defined transverse series of ochraceous spots on the basal portion. Primaries ochraceous on the basal two-thirds, the terminal portion clear dark brown, the tips (broadly) pale brownish yellowish—this obsolete on the longest; the dusky extends toward the bases, in three to five irregularly transverse series of quadrate spots on the outer webs, leaving, however, a large basal area of plain ochraceous—this somewhat more whitish anteriorly. The ground color of the tail is ochraceous—this somewhat whitish exteriorly and terminally—crossed by five broad bands (about equaling the ochraceous, but becoming narrower toward outer feathers) of blackish brown; on the middle feathers the ochraceous spots enclose smaller, central transverse spots of blackish; the terminal ochraceous band is broadest. Eyebrows, lores, chin and throat soiled white, the loreal bristles with black shafts; face dingy ochraceous white, feathers

with darker shafts; eye broadly encircled with black. Post-orbital circle minutely speckled with pale ochraceous and blackish, except immediately behind the ear, where for about an inch it is uniform dusky. Lining of the wing immaculate delicate yellowish white; terminal half of under primary coverts clear blackish brown; under surface of primaries plain delicate ochraceous white; ends and one or two very broad anterior bands dusky."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	14.25	39.00	12.25	5.75	1.70	.75	.40
Female	16.00	41.50	13.00	6.00	1.70	.80	.40

Iris yellow; bills and claws brownish to bluish black.

This species inhabits the open flats, marshes and prairie lands. I have never met with these birds in wooded lands or thickets. As a rule, they are rather silent. Mr. Nelson says that he heard one of the birds, in Alaska, utter rapidly a loud cry, which sounded like the syllables, "Hoo, hoo, hoo, hoo," in a higher key than the note of the Horned Owl, and in a much less sonorous tone. And I have heard them, when alarmed for their young, utter a shrill, hollow cry, and at the same time make quite a noise by spitefully snapping their bills.

They are not strictly nocturnal, but, rather, crepuscular in their habits. I have seen them occasionally coursing in dark days and often at twilight. Their flight is steady and easy, and, when hunting, usually hover for a moment over their prey before dropping upon the same. Their food consists chiefly of mice, ground squirrels, gophers, etc., and they are quite destructive to small water birds that rest at night in flocks upon the sand bars and shores. I have, upon dissection, found a few feathers from Meadowlarks and Longspurs, but most of the land birds roost in the thickets and groves, which are outside of their range.

These birds breed from the Gulf States north to within the Arctic circle, but seldom south of the Middle States, and chiefly in the more northern regions. Like most of the Owl family, they commence sitting from the time they begin to lay, and it is not unusual to find eggs and young birds in the same nest. A nest found at Neosho Falls, May 8th, 1887, contained seven young birds, from half grown to newly hatched. Their nests are usually placed in thick grass on marshy or low prairie lands. They are chiefly made of old grasses; some are quite bulky,

others a mere hollow worked out in the earth to fit the body, and but scantily lined. Eggs four to eight; white; in form, roundish oval.

GENUS **SYRNIUM** SAVIGNY.

"Size varying from medium to very large. No ear tufts. Head very large, the eyes comparatively small. Four to six outer primaries with their inner webs sinuated. Tarsi and upper portion, or the whole of the toes, densely clothed with hair-like feathers. Tail considerably more than half as long as the wing, decidedly rounded. Ear orifice very high, but not so high as the skull, and furnished with an anterior operculum, which does not usually extend along the full length; the two ears asymmetrical. Bill yellow."

Syrnium nebulosum (FORST.).

BARRED OWL.

PLATE XX.

Resident; common. Begin laying early in March.

B. 54. R. 397. C. 476. G. 184, 140. U. 368.

HABITAT. Eastern North America; north to New Brunswick and Manitoba; south to Georgia and northern Texas; western limits not determined. I have never met with them west of Kansas. Dr. Woodhouse speaks of the birds as common in New Mexico, and they may go that far west, but I think the birds there will all prove to be the Spotted Owl, *S. occidentale*.

SP. CHAR. "*Adult:* Head, neck, breast, back, scapulars and rump with broad regular transverse bars of ochraceous white and deep umber brown, the latter color always terminal; on the upper surface the brown somewhat exceeds the whitish in width, but on the neck and breast the white rather predominates. The lower third of the breast is somewhat differently marked from the upper portion, the brown bars being connected along the shaft of the feather, throwing the white into pairs of spots on opposite webs. Each feather of the abdomen, sides, flanks and lower tail coverts has a broad medial-longitudinal stripe of brown, somewhat deeper in tint than the transverse bars on the upper parts; the anal region is plain, more ochraceous white; the legs have numerous but rather faint transverse spots of brown. Ground color of the wings and tail brown, like the bars of the back; middle and secondary wing coverts with roundish transverse spots of nearly pure white on lower webs; lesser coverts plain rich brown; secondaries crossed by six bands of pale grayish brown, passing into paler on the edge of each feather; the last is terminal, passing narrowly into whitish; primary coverts with four bands of darker ochraceous brown; primaries with transverse series of quadrate pale brown spots on the outer webs (growing deeper in tint on inner quills), the last terminal; on the longest are about eight. Tail (like the wings) crossed with six or seven sharply-defined bands of pale brown, the last terminal. Face grayish white, with concentric semicircular bars of brown;

"eyebrows" and lores with black shafts; a narrow crescent of black against anterior angle of the eye. Facial circle of blackish brown and creamy white bars, the former prevailing along the anterior edge, the latter more distinct posteriorly, and prevailing across the neck in front, where the brown form disconnected transverse spots."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	19.20	45.00	13.25	9.00	2.20	1.05	.50
Female . . .	20.50	46.00	13.50	9.50	2.20	1.10	.50

Iris bluish black; bill dull yellow; claws horn color.

This is one of our most common Owls. I have occasionally met with it in the deep forest, but it is usually found in the woodlands bordering the streams, marshes, and low prairie lands. At the approach of twilight the solitude surrounding them is occasionally broken by their loud laughing call note: "Waugh, waugh, waugh, wah, har, a," or, "Who, who, who, wah, who, a." During the early breeding season they are especially noisy, and in camp I have often, in the still hours of night, been awakened by their guttural call. The birds are said by some writers to occasionally hunt by day, and they may do so when the young are clamorous for food, but I imagine with poor success, for from my observation they do not appear to see clearly enough in daylight to readily distinguish objects; but as the shades of evening darken, they leave their retreats, and, with noiseless wings* and easy, steady flight, course near the ground, ready to snatch up or pounce upon the unlucky little quadrupeds or birds in sight. Frogs also help to make up their bill of fare. In their destruction of rabbits, mice, gophers, etc., they are of great value to the farmer. Of course, fowls that are allowed to roost at night upon outbuildings, fences and trees fall an easy prey; but, as the poorest farmer is able to erect a suitable hen house, he is not entitled to sympathy for any such outside loss.

Their nests are usually placed in natural cavities of trees, but they occasionally breed in old Hawks' nests in the forks of the branches; a few feathers and leaves generally constitute the lining. Eggs two to four, 2.05x1.65; white; in form, nearly spherical.

*The webs of the primaries, or wing quills, of all Owls that I have examined, are remarkably soft and pliant, yielding so readily to the pressure of the air as to enable them to swiftly steal unheard upon their prey.

GENUS **NYCTALA** BREHM.

"Size small. Head very large, without ear tufts. Eyes moderate; iris yellow. Two outer primaries only with their inner webs distinctly emarginated. Tarsi and toes densely, but closely, feathered. Ear conch very large, nearly as high as the skull, with an anterior operculum; the two ears exceedingly asymmetrical, not only externally, but in their osteological structure. Forcula not anchylosed posteriorly, but joined by a membrane."

Nyctala acadica (Gmel.).

SAW-WHET OWL.

PLATE XX.

A winter sojourner; rather rare.

B. 56. 57. R. 401. C. 483. G. 185. 141. U. 372.

HABITAT. The United States and southern British possessions, from the Atlantic to the Pacific; seldom found in the eastern portion south of Pennsylvania; in the western mountain regions south into Mexico; breeding from the middle United States northward.

SP. CHAR. "*Adult*: Upper surface, plain soft reddish olive, almost exactly as in *N. richardsoni*; forehead, anterior part of the crown and the facial circle with each feather with a short medial line of white; feathers of the neck white beneath the surface, forming a collar of blotches; lower webs of scapulars white bordered with brown; wing coverts with a few rounded spots; alula with the outer feathers broadly edged with white; primary coverts and secondaries perfectly plain; five outer primaries with semi-rounded white spots on the outer webs, these decreasing toward the ends of the feathers, leaving but about four series well defined; tail crossed with three widely separated narrow bands of white, formed of spots not touching the shafts on either web; the last band is terminal; 'eyebrow' and sides of the throat white; lores with a blackish suffusion, this more concentrated around the eye; face dirty white, feathers indistinctly edged with brownish, causing an obsoletely streaked appearance; the facial circle in its extension across the throat is converted into reddish umber spots; lower parts, generally, silky white, becoming fine ochraceous on the tibia and tarsi; sides of the breast like the back, but of more reddish or burnt sienna tint; sides and flanks with longitudinal daubs of the same; jugulum, abdomen, lower tail coverts, tarsi and tibia immaculate. *Young*: Upper surface continuous plain dark sepia olive; face darker, approaching fuliginous vandyke, perfectly uniform; around edge of the forehead, a few shaft lines of white; scapulars with a concealed spot of pale ochraceous on lower web; lower feathers of wing coverts with a few white spots; outer feathers of the alula scalloped with white; primary coverts perfectly plain; five outer primaries with white spots on outer webs, these diminishing toward the end of the feathers, leaving only two or three series well-defined; tail darker than the wings, with three narrow bands composed of white spots, these not touching shaft on either web; 'eyebrows' immaculate white; lores more dusky; face and eyelids dark vandyke brown;

sides of the chin white; throat and whole breast like the back, but the latter paler medially, becoming here more fulvous; rest of lower parts plain fulvous ochraceous, growing gradually paler posteriorly—immaculate; lining of the wing dull white; under surface of primaries with dusky prevailing, but this crossed by bands of large whitish spots; the three outer feathers, however, present a nearly uniform dusky aspect, being varied only basally."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	7.35	18.75	5.25	2.80	.85	.50	.25
Female . . .	7.75	19.50	5.45	3.15	.85	.50	.25

Iris yellow; bill and claws black; bottoms of feet yellowish flesh color.

The natural home of this sprightly little Owl is within the wild woodlands, though occasionally found about the habitations of man. It is very shy and retiring in its habits, rarely leaving its secluded retreats until late at eve, and for these reasons is without doubt much more common throughout its range than is generally supposed. Its food consists chiefly of mice and insects, also small birds, but the latter are not so easily caught. In searching for food it glides smoothly and noiselessly through the air.

I enter this bird as a winter sojourner in Kansas because (to my knowledge) they have only been seen or taken in the fall and winter, and I have never heard their shrill love call in the State.* Notwithstanding this, and the further fact that they have only been found breeding northward, I am inclined to think that they do occasionally breed throughout their range.

The birds nest in old, deserted Woodpecker's holes and small hollows in trees. Their eggs are laid on the rotten wood or decayed material at the bottom; usually four in number, 1.20x1.00; white; in form, nearly spherical.

GENUS **MEGASCOPS** KAUP.

"Size small; the head provided with ear tufts. Bill light colored; iris yellow. Three to four outer quills with inner webs sinuated. Wings long (more than twice the length of the tail, which is short and slightly rounded); second to fifth quills longest. Toes naked, or only scantily feathered. Ear conch small and simple; plumage exceedingly variegated; the colors different shades of brown, with rufous, black and white in fine mottlings and pencilings; feathers

*A noise somewhat resembling the filing of a mill saw, which accounts for the name they bear.

above usually with blackish shaft streaks, those beneath usually with five transverse bars; primaries spotted with whitish, and outer webs of the lower row of scapulars the same, edged terminally with black. Tail obscurely banded."

Megascops asio (LINN.).

SCREECH OWL.

PLATE XX.

Resident; abundant. Begin laying early in March.

B. 49. R. 402. C. 465. G. 186, 142. U. 373.

HABITAT. Temperate eastern North America; south to Georgia and west to the Great Plains.

SP. CHAR. "Dichromatic; the plumage presenting two distinct phases at all ages and seasons; one grayish, the other rufous."

Grayish Plumage.

"*Adult*: Ground color above brownish cinereous, palest on the head, purest ashy on the wings, minutely mottled with fine zigzag transverse bars of black, each feather with a medial ragged stripe of the same along the shaft. Inner webs of ear tufts, outer webs of scapulars, and oval spots occupying most of the outer webs of the two or three lower feathers of the middle and secondary wing coverts, white, forming (except on the first) conspicuous spots, those of the scapulars bordered with black; secondaries crossed with about seven regular paler bands, each enclosing a more irregular dusky one; the ground color, however, is so mottled with grayish, and the paler bands with dusky, that they are by no means sharply defined or conspicuous, though they are very regular; alula and primary coverts more sharply barred with cream colored spots, those on the former nearly white; primaries with broad quadrate spots of creamy white on outer webs, these forming from seven (male) to eight (female) transverse bands, the last of which is not terminal. Tail more irregularly mottled than the wings and crossed by seven (male) to eight (female) narrow obsolete (but continuous) pale bands. 'Eyebrows' white, the feathers bordered with dusky (most broadly so in male); cheeks, ear coverts and lower throat dull white, with transverse bars of blackish (most numerous in the male); chin immaculate; upper eyelids dark brown; facial black; neck and jugulum like the cheeks, but more strongly barred, and with blackish along the shaft. Ground color of the lower parts white, each feather with a medial stripe of black, this throwing off distinct bars to the edge of the feather; the medial black is largest on sides of the breast, where it expands into very large conspicuous spots, having a slight rusty exterior suffusion; the abdomen medially, the anal region and the lower tail coverts are almost unvaried white. Tibia and tarsi in the male dull white, much barred transversely with blackish; in the female pale ochraceous, more sparsely barred with dark brownish. Lining of the wing creamy white, varied only along the edge; light bars on under surface of primaries very obsolete."

Rufescent Plumage.

"*Adult*: General pattern of the preceding, but the grayish tints replaced by lateritious rufous, very fine and bright, with a slight vinaceous cast; this is uniform, and shows no trace of the transverse black mottling; there are, however,

black shaft lines on the feathers (these most conspicuous on the head above and scapulars, and narrower and more sharply defined than in the gray plumage.) The inner webs of the ear tufts, outer webs of scapulars and lower secondary and middle wing coverts are white, as in the gray plumage; those of the scapulars are also bordered with black. The secondaries, primaries and tail are less bright rufous than other portions, the markings as in the gray plumage, only the tints being different. The upper eyelid, and in fact all round the eye, fine light rufous; cheeks and ear coverts paler, scarcely variegated; black facial circle rather narrower than in the gray plumage. Lower parts without the transverse bars of the gray plumage, but in their place an irregular clouding of fine light red, like the back; the lower parts medially (very broadly) immaculate snowy white; most of the feathers having the red spotting show black shaft stripes, but the pectoral spots are not near so large or conspicuous as in the gray bird. Tibia fine pale ochraceous rufous; tarsi the same posteriorly, in front white with cuneate specks of rufous; lower tail coverts each with a medial transversely cordate spot of dilute rufous, the shaft black. Lining of the wing with numerous rufous spots."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	9.00	21.00	6.20	3.25	1.20	.50	.30
Female . . .	9.50	22.50	6.55	3.50	1.30	.60	.30

Iris yellow; bill, cere and claws light greenish horn color.

This is one of our most abundant and well-known night Owls. It inhabits alike the woods and the habitations of man. Its food consists of mice, small birds, insects, etc.; in searching for the same, it flies noiselessly but actively about, occasionally capturing its prey upon the wing, but usually pouncing upon it. These birds are rather easily tamed.

When a small boy, in my old New England home, I reared one from the nest, that was quite attractive, and, as I was the only one that fed or cared for it, it became strongly attached to me, and, no matter how roughly handled, never showed the least bit of anger; but, upon the approach of a stranger, it would erect its feathers and sharply snap its bill. At the sight of the house cat it was wild with fear and rage, and could not be pacified until Thomas was removed. I gave it the liberty of the dark garret beneath the roof of our house, and in the center of the room placed corn, bread and toasted cheese to attract the mice, and, from the ejected pellets of mouse hair, I know that it captured many mice. At night or in a dark place, it would come to me at call, and alight on my arm or hand, take and readily eat insects and small bits of food, but, if the piece was

large, would fly with it to its perch before attempting to eat it. In daytime it seldom came at call, but would always answer with a low, guttural, rattling note. Boy-like, it was one of my chief delights at eve to drop a mouse from a trap into a box. At sight of the mouse it would raise its feathers, quiver with excitement and eagerly pounce upon it, bite it through the back until limp or dead, then, with a chuckling note of satisfaction, carry it to its perch. The birds make quite a variety of low sounds, but the only one heard at a distance is its screeching, tremulous, wailing call note or song, so often heard at eve and during the night, especially when the moon is shining.

Their nests are placed in holes in trees, occasionally in nooks in buildings. They are sparingly lined with grasses, leaves and feathers. Eggs four to six, 1.40x1.22; pure white; in form, subspherical.

GENUS **BUBO** CUVIER.

"Two to three outer quills with their inner webs emarginated. Ear tufts well developed; loreal feathers not hiding the bill, and the claws and terminal scutella of the toes exposed. Lower tail coverts not reaching the end of the tail."

Bubo virginianus (GMEL.).

GREAT HORNED OWL.

PLATE XX.

Resident; common. Begin laying the last of February.

B. 48. R. 405. C. 462. G. 187, 143. U. 375.

HABITAT. Eastern North America; west to the edge of the Great Plains; south through eastern Mexico, to Costa Rica.

SP. CHAR. "Plumage varies more or less in depth of coloration. *Adult:* Bases of the feathers yellowish rufous, this partially exposed on the head above the nape, along the scapulars, on the rump, and sides of the breast. On the upper surface this is overlaid by a rather coarse transverse mottling of brownish black upon a white ground, the former rather predominating, particularly on the head and neck, where it forms broad, ragged, longitudinal stripes, (almost obliterating the transverse bars,) becoming prevalent, or blended, anteriorly. The lower feathers of the scapulars, and some of the lower feathers of the middle and secondary wing coverts, with inconspicuous transverse spots of white. On the secondaries the mottling is finer, giving a grayish aspect, and crossed with eight sharply-defined but inconspicuous bands of mottled dusky; primary coverts with the ground color very dark, and crossed with three or four bands of plain blackish, the last terminal, though fainter than the rest; ground color of the primaries more yellowish, the mottling more delicate; they are crossed by nine transverse series of quadrate dusky spots. The ground color of the tail is

pale ochraceous (transversely mottled with dusky), becoming white at the tip, crossed by seven bands of mottled blackish, these about equaling the light bands in width; on the middle feathers the bands are broken and confused, running obliquely, or, in places, longitudinally. Outer webs of ear tufts pure black; inner shafts almost wholly ochraceous; eyebrows and lores white, the feathers with black shafts; face dingy rufous; eye very narrowly encircled with whitish; a crescent of black bordering the upper eyelid, and confluent with the black of the ear tufts. Facial circle continuous black, except across the foreneck; chin, throat and jugulum pure immaculate white, to the roots of the feathers. Beneath, white prevails, but the yellowish rufous is prevalent on the sides of the breast, and shows as the base color wherever the feathers are disarranged. The sides of the breast, sides and flanks have numerous sharply defined narrow transverse bars of brownish black; anteriorly these are finer and more ragged, becoming coalesced so as to form conspicuous, somewhat longitudinal, black spots. On the lower tail coverts the bars are distant, though not less sharply defined. The abdomen medially is scarcely maculate white. *Young:* Wings and tail as in adult. Downy plumage of head and body ochraceous, with detached, rather distant, transverse bars of dusky."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>	<i>Cere.</i>
Male	21.50	52.00	14.50	8.50	2.20	1.05	.50
Female . . .	23.00	55.00	15.50	9.00	2.25	1.10	.50

Iris yellow; bill, cere and claws black.

This bird inhabits not only the wooded lands, but our broad prairies, resting during the day in thickets, hollow trees, clefts in rocks, or most any secluded spot. I have occasionally started them from a hummock, in a rank growth of tall grass. They are not strictly a night bird, as I have often seen them during the day, while rearing their young, in search of food; but, unless pressed by hunger, seldom venture out until the little day birds, that annoy them greatly, have retired to their roosts. At twilight and on moonlight nights they are the most active, flying noiselessly and with ease through the timber and over the open ground in search of rabbits, mice, and other small quadrupeds that feed and run about at night, doing great damage to the farmer in his fields. It is, therefore, one of our most beneficial birds, and not injurious, except to the owners of fowls that are either too lazy, or not thoughtful enough, to house them at night.

In olden times the Owls, on account of their rounded heads, large bright eyes, and stately mien, were selected by the philosophers as emblems of wisdom; but their gloomy habits and,

night wanderings impressed the superstitious with the thought that they were the embodiment of evil spirits, and their hoots that broke the stillness of night struck terror to their hearts, as well as to the awakened birds upon the perch, and their voice was supposed to bode no good, and their silent visits the forerunner of death. But of late years, as we come to know their ways and habits better, we more properly associate them with the feline race—emblems of desolation; and this powerful bird may well be called the tiger among birds. Its loud, guttural, “Whaugh, ho, hoo, hoo,” is not only a note of love, but one of defiance. The birds are, however, very attentive parents, both assisting in hatching and rearing their young. The female (as is the case with nearly all birds of prey) is the larger bird, in order to protect the family in case of a quarrel with her mate, and from his too aggressive advances.

It nests in natural cavities of trees, deserted nests of Hawks, and, on the plains or prairies, in fissures of rocks; nest scantily lined with leaves and grasses. Eggs two to four, 2.25x1.90; white; in form, subspherical.

Bubo virginianus subarcticus (Hoy).

WESTERN HORNED OWL.

PLATE XX.

Resident in western Kansas; rare.

B. —. R. 405a. C. 463. G. —, 144. U. 375a.

HABITAT. Western United States; north into Manitoba; south over the table lands of Mexico; east across the Great Plains to western Texas and western Manitoba; straggling occasionally eastward.

SP. CHAR. “Pattern of coloration like that of *B. virginianus*, but the general aspect much lighter and more grayish, caused by a greater prevalence of the lighter tints, and contraction of dark pencilings; the ochraceous much lighter and less rufous; face soiled white, instead of deep dingy rufous.”

This western form does not appear to differ in size, actions or habits from the Great Horned Owl.

GENUS NYCTEA STEPHENS.

Ear tufts rudimentary; tail not reaching beyond tips of lower coverts; four outer quills with inner webs emarginated; toes covered with long, hair-like feathers, partly or wholly concealing the claws; bill nearly concealed by the loreal feathers. (*Ridgway*.)



PLATE XXI.

1. SNOWY OWL; Male. 2. BURROWING OWL; Male. 3. YELLOW-BILLED CUCKOO; Male. 4. BLACK-BILLED CUCKOO; Male. 5. CAROLINA PAROQUET; Male. 6. BELTED KINGFISHER; Male. 7. ROAD-RUNNER; Male. 8. FEMALE. 9. FEMALE. 10. FEMALE. 11. FEMALE. 12. FEMALE.

Nyctea nyctea (LINN.).**SNOWY OWL.**

PLATE XXI.

Winter resident; rather irregular; at times quite common. Begin to arrive as early as the first of November, usually returning by the first of February.

B. 61. R. 406. C. 479. G. 188, 145. U. 376.

HABITAT. The northern portion of the northern hemisphere; migrating south in winter; in North America, as far as Texas and South Carolina; accidental to the Bermudas.

SP. CHAR. *Adult male:* Plumage pure white, sometimes almost immaculate, but usually marked more or less with transverse spots or bars of clear slaty brown on top of head, back and scapulars, the quills and tail feathers with dusky spots near ends; lower parts usually marked more or less on belly, sides and flanks with narrow bars of clear slaty brown, but these markings sometimes altogether wanting. *Adult female:* Much darker colored than male, only the face, foreneck, middle of breast and feet being immaculate, other portions being heavily barred with dusky, the top of the head and hindneck spotted with the same. *Downy young:* Uniform dusky brown, or deep sooty grayish, paler on feet and legs. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill and Cere.
Male.....	22.00	58.00	15.50	9.25	1.80	1.50
Female...	24.00	61.50	17.30	10.00	1.85	1.60

Iris yellow; bill and claws horn blue, nearly black at tips.

This large, handsome Owl hunts for its prey by day, as well as at dusk, and does not appear to avoid the bright sunshine, as it is often to be seen at such times perched upon a snow-crowned knoll, where the glare of the sun to us would be painful.

In flight they are very active, skimming along near the ground, grasping in their claws the unlucky rabbit or Grouse in their course. Their breeding habits are only known to those who have been so fortunate as to meet with them in their northern home. Mr. Nelson, in his "Report of Natural History Collection in Alaska," gives the following interesting account of these birds:

"From the Sitkan region north to the farthest point of that Territory the present bird keeps mainly to the more barren portions of the coast and interior, and is always found less numerous where trees are abundant. It occurs also upon the

islands of Behring Sea, and more sparingly upon the Aleutian chain, where it is rare. It is resident at Point Barrow, and also on the Near Islands. On Behring Island it has become abundant since the introduction of mice. On June 12, 1877, we were on a vessel about seventy-five miles east of the Fur Sea Islands, when one of these birds came on board and remained most of the night in the rigging, but left early in the morning.

“The Eskimo are well acquainted with these birds and with their habits, and one man told me he had seen these Owls catch the large Arctic hare by planting one foot in the hare’s back, and stretching the other foot back and dragging its claws on the snow and ground. At the same time the bird used his wings to hold back, by reverse strokes, until the hare soon became exhausted, when it was easily killed.

“On the lower Mackenzie, Richardson relates that one of the Hudson’s Bay Company’s factors, Mr. McPherson, saw one of these Owls fly over a cliff and carry off a full-fledged Duck Hawk in its claws. It crossed the river to the other bank, where it lit on the shore to devour its prey. The parent Hawk followed, uttering loud screams, and, darting down with great rapidity, killed the Owl with a single stroke, but whether with the wing or claw could not be determined. After this summary act of vengeance the Falcon returned to its nest.

“This Owl also preys upon Ducks, as Stejneger saw it pursue Sea Ducks on the reefs of Behring Island.

“North of Hudson Straits Kumlien found Snowy Owls rather scarce during the winter, and saw them hunting during the day, but notes their excessive shyness. This shyness seems to be characteristic of the bird through its northern range, and even upon the lonely and almost unknown Wrangel Island, where, upon our landing, one of the birds was seen, it arose hastily and left for the interior, although we were about two hundred yards from it when it first caught sight of us. It has been reported as a resident of the Aleutian Islands, where Dall saw a dead bird and fragments of skins of others at Unalsaka. It is more common in the northern part of the Territory, where its distribution, however, is irregular, it being abundant at one sea-

son and almost totally unknown the next. I was informed by Captain Smith—a well known whaling captain of that region—that he had seen as many as fifty of these birds perched in view at one time along the abrupt coast line of the Arctic, in the vicinity of Cape Lisburne, and yet they were so shy that it was impossible to secure a single bird. It breeds upon the ground, as far south as the mouth of the Kuskoquim, especially during the years when lemmings are abundant, when this Owl also becomes proportionately numerous. The natives told me of seasons, separated by long intervals, when the lemmings have occurred in the greatest abundance, and the White Owl accompanying them in such numbers that they were seen dotting the country here and there as they perched upon the scattered knolls. During such seasons the Owls nest on the hillsides, laying, according to the natives, from five to ten eggs, in a grassy depression in a sheltered spot on the hillside. The last time when they were so abundant about a dozen pairs were found nesting upon an isolated hill near the coast, just east of St. Michael's, as I was informed by several different persons.

“On one occasion, while traveling south of the Yukon, in December, I secured a beautiful specimen of this bird, which was nearly immaculate milky white, with a rich and extremely beautiful shade of clear lemon yellow suffusing the entire bird, exactly as the rosy blush clothes the entire plumage of some gulls in the spring. The bird was kept until the next morning; an examination then showed that beautiful tinge had vanished and the feathers had become dead white, with a bare trace of the coloring seen the previous evening. The birds showing the largest amount of white are usually males.

“The highest latitudes reached by Arctic explorers have not exceeded the bounds of this hardy bird, which is represented by a similar or identical form around the northern shores of the old world. In the ‘History of North American Birds,’ the American bird is separated from the European by the greater amount of white possessed by the latter. It is rather common to find pure white specimens of this bird, from the northern part of America, marked by a very few scattered spots upon the back.

A specimen sent to the National Museum from Sitka, taken during the winter of 1881-82, has a larger amount of black markings than any bird I have seen. It may indicate a local dark colored form in that region.

“The Snowy Owl is said to nest in Lapland, after a great lemming season, and in northern Norway as well. When it nests there, it always chooses a hilltop or hillside. The eggs, which are from six to eight or more in number, measure from 2.05x1.02 to 2.25x1.77, and are of a roundish, oval form; the color is white, and the shell has a fine texture. Like numerous other birds, this Owl figures largely in the mythologic tales of the northwestern Eskimo, one of which, in particular, is an interesting account of the way in which man learned the use of various implements, by the experience of a metamorphosed Owl. It does not appear to have been a very common bird near the winter quarters of the Vega, although every explorer has found it wherever he has penetrated the Arctic.

“Wrangel accuses these birds of being carrion eaters in northern Siberia. During the Nares Arctic expedition, these birds were found nesting on Grinnell Land, in latitude 82° 33' north, on June 24th, when a nest with seven eggs was found. The eggs were placed in a mere hollow, scooped out of the earth, on the top of a rise, in the center of a valley. They were found nesting in abundance by the same party in latitude 81°.”

GENUS **SPEOTYTO** GLOGER.

“Size small; head small, and without ear tufts. Bill moderately strong, pale yellowish. Tarsi more than twice as long as the middle toe, feathered in front, naked behind; toes scantily haired. Tail short, less than half the wing, nearly even, or very slightly rounded. Three outer quills with their inner webs emarginated; second to fourth longest. Ear conch very small, simple, roundish. Diurnal and terrestrial.”

Speotyto cunicularia hypogæa (BONAP.).

BURROWING OWL.

PLATE XXI.

Resident; abundant in the middle and western part of the State. Begin laying about the middle of April.

B. 58. 59. R. 408. C. 487. G. 189. 146. U. 378.

HABITAT. Western North America; north to or a little beyond the northern boundary of the United States; south to Guatemala; east to middle Texas and Nebraska; occasionally straggle eastward. A specimen captured in New York city, and one in Massachusetts, I think cage birds rather than stragglers, as reported. (The birds in Florida are variety *floridana*.)

SP. CHAR. "*Adult:* Above, earth brown, the whole surface covered with numerous spots of dull white, those on the scapulars roundish and in pairs (on both webs); of similar form, but larger and more sparse, on the wings. Anteriorly they become more longitudinal (nearly linear) and medial; on the rump and upper tail coverts they are nearly obsolete. Secondaries crossed by four distinct bands of dull white, the last terminal; primaries with five to six transverse series of semi-rounded spots of ochraceous white on their outer webs; primary coverts with about three transverse series of whitish spots. Tail with five to six bands of dull white or pale ochraceous (the last terminal), composed of transverse oval spots, those on the middle pair of feathers not touching either the shaft or the edge. Ear coverts uniform brown, becoming gradually paler beneath the eye and on the cheeks; eyebrows, a transverse chin patch (covering the whole chin and jaw and reaching back beneath the auriculars), and another across the jugulum, immaculate cottony white; shafts of the loral bristles blackish; a broad, well-defined collar across the throat, between the white malar and jugular bands, deep brown, mixed with paler spots. Beneath, whitish with an ochraceous tinge, deepest on the legs; the breast, abdomen and sides with transverse spots of brown, this often predominating on the breast; legs, anal region and crissum immaculate. Whole lining of the wing immaculate creamy white, the primary coverts, however, with large terminal spots of dusky; under surface of the primaries grayish brown (deeper terminally), and with large transversely-ovate spots of ochraceous white (about five in number on the longest quill), and growing larger basally. *Young:* Upper surface earth brown, as in the adult, but entirely uniform (except the wings and tail); upper tail coverts and a large oval patch on the wing (covering the middle coverts and the posterior half of the lesser covert region) plain Isabella white; the anterior portion of the lesser covert region darker brown than the back. Gular region well-defined pure white; jugular collar conspicuous and unspotted. Whole lower parts immaculate Isabella white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.	Cere.
Male	9.50	24.00	7.00	3.40	1.80	.65	.20
Female . . .	9.25	23.50	6.80	3.30	1.80	.65	.20

Iris yellow; bill light greenish yellow; cere and claws blackish; feet dull brown. The above dimensions are from a pair in "The Goss Ornithological Collection." From the measurements I have taken of many others, I do not think the sexes differ in size. In all other birds of prey the female is decidedly the larger bird.

Dr. Coues, in his "Birds of the Northwest," gives the following full and interesting description of its habits:

"The Burrowing Owl is the only bird of its family inhabiting in any numbers the entirely treeless regions of the West, and may be considered characteristic of the plains. Wherever it can find shelter in the holes of such animals as wolves, foxes and badgers, and especially of the various species of marmot squirrels, there it is found in abundance; and in not a few instances small colonies are observed living apart from their ordinary associates, in holes apparently dug by themselves. They constitute a notable exception to the general rule of arboricole habits in this family, being especially fitted by their conformation for the subterranean mode of life for which they are designed, and are furthermore exceptional in their gregarious disposition, here carried to the extreme. The diffusion of the species in the West is so general that there is little occasion to mention particular localities.

"The Owls are by no means confined to the dog towns, nor even to the similar communities of other gregarious speromophiles. They sometimes occupy the underground dens of wolves, foxes and badgers. In South America, the representative race lives among the bizcachas (*Lagostomus tzichodactylus*) that inhabit the Pampas. On some occasions the birds have been found alone, residing apparently in burrows excavated by themselves, as already stated. They are by no means nocturnal; able to endure the sunlight without inconvenience, they may be observed abroad at all hours. It has been stated that in autumn, at the approach of cold weather, they retire into their burrows to hibernate—a fable matching the one that ascribes to Swallows the habit of diving into the mud to pass the winter in repose along with torpid frogs. In most localities the birds are abroad the year round; their disappearance in inclement regions is accomplished, if at all, by ordinary migration. In California I saw them, bright and lively as crickets, in November.

"I never undertook to unearth the nest of a Burrowing Owl, but others have been more zealous in the pursuit of knowledge

under difficulties. Dr. Cooper says that he once dug two fresh eggs out of a burrow, which he followed down for three feet, and then traced for five feet horizontally, at the end of which he found an enlarged chamber, where the eggs were deposited on a few feathers. In his interesting note in the American Naturalist, Dr. C. S. Canfield gives a more explicit account of the nesting: 'I once took pains to dig out a nest of the *Athene cunicularia*. I found that the burrow was about four feet long, and the nest was only about two feet from the surface of the ground. The nest was made in a cavity of the ground of about a foot in diameter, well filled with dry, soft horse dung, bits of old blanket, and fur of a coyote (*Canis latrans*) that I had killed a few days before. One of the parent birds was on the nest, and I captured it. It had no intention of leaving the nest, even when entirely uncovered with the shovel and exposed to the open air. It fought bravely with beak and claws. I found seven young ones, perhaps eight or ten days old, well covered with down, but without any feathers. The whole nest, as well as the birds (old and young), swarmed with fleas. It was the filthiest nest I ever saw. In the passage leading to it there were small scraps of dead animals, such as pieces of the skin of the antelope, half dried and half putrified, the skin of the coyote, etc.; and near the nest were the remains of a snake that I had killed two days before, a large *Coluber*, two feet long. The birds had begun at the snake's head and had picked off the flesh clean from the vertebra and ribs for about one half its length; the other half of the snake was entire. The material on which the young birds rested was at least three inches deep. There are very few birds that carry more rubbish into their nests than the *Athene*; and even the Vultures are not much more filthy. I am satisfied that the *A. cunicularia* lays a larger number of eggs than is attributed to it in Dr. Brewer's book (four). I have frequently seen, late in the season, six, seven or eight young birds standing around the mouth of a burrow, isolated from others in such a manner that I could not suppose that they belonged to two or more families.'

“The notes of the Burrowing Owl are peculiar. The birds

do not 'hoot,' nor is there anything lugubrious or foreboding in their cry. Sometimes they chuckle, chatter and squeal in an odd way, as if they had caught a habit of barking from the 'dogs' they live with, and were trying to imitate the sound; but their nocturnal cry is curiously similar to that of the Rain Crow or Cuckoo of America—so much so, that more than one observer has been deceived. They scream hoarsely when wounded and caught, though this is but seldom, since, if any life remains, they scramble quickly into a hole, and are not easy to recover. The flight is perfectly noiseless, like that of other Owls, owing to the peculiar downy texture of the plumage. By day they seldom fly far from the entrance of their burrow, and rarely, if ever, mount in the air. I never saw one on the wing more than a few moments at a time, just long enough for it to pass from one hillock to another, as it does by skimming low over the surface of the ground, in a rapid, easy, and rather graceful manner. They live chiefly upon insects, especially grasshoppers; they also feed upon lizards, as I once determined by dissection, and there is no doubt that young prairie dogs furnish them many a meal. Under ordinary circumstances, they are not very shy or difficult to procure; I once secured several specimens in a few minutes, and, I fear, left some others to languish and die in their holes. As commonly observed, perched on one of the innumerable little eminences that mark a dog town, amid their curious surroundings, they present a spectacle not easily forgotten. Their figure is peculiar; with their long legs and short tail, the element of the grotesque is never wanting. It is hard to say whether they look most ludicrous as they stand stiffly erect and motionless, or when they suddenly turn tail to duck into the hole, or when engaged in their various antics. Bolt upright, on what may be imagined their rostrum, they gaze about with a bland and self-satisfied but earnest air, as if about to address an audience upon a subject of great pith and moment. They suddenly bow low, with profound gravity, and, rising abruptly, they begin to twitch their faces and roll their eyes about in the most mysterious manner, gesticulating wildly, every now and then bending forward till the breast almost touches the

ground, to propound the argument with more telling effect; then they face about to address the rear, that all may alike feel the force of their logic; they draw themselves up to the fullest height, outwardly calm and self-contained, pausing in the discourse to note its effect upon the audience and collect their wits for the next rhetorical flourish. And no distant likeness between these frothy orators and others is found in the celerity with which they subside and seek their holes on the slightest intimation of danger."

Eggs usually four to seven (as high as eleven have been taken), 1.22x1.04; pure white; in form, subspherical.

ORDER PSITTACI.

PARROTS, MACAWS, PAROQUETS, ETC.

"Bill enormously thick, short, high, much arched from the base; the upper mandible strongly hooked at the end, cered at base and freely movable by complete articulation with the forehead; the under mandible with short, broad, truncate symphysis. Feet permanently zygodactyle by reversion of the fourth toe, which articulates by a double facet. Tarsi reticulate. Syrinx peculiarly constructed, of three pairs of intrinsic muscles. Tongue short, thick, fleshy. Sternum entire or fenestrate. Clavicles weak, defective or wanting. Orbit more or less completed by approach or union of postorbital process and lachrymal. Altricial; psilopædic."

FAMILY PSITTACIDÆ.

"Bill greatly hooked; the maxilla movable and with a cere at the base. Nostrils in the base of the bill. Feet scansorial, covered with granulated scales."

GENUS CONURUS KUHLM.

"Tail long, conical and pointed; bill stout; cheeks feathered, but in some species leaving a naked ring around the eye; cere feathered to the base of the bill."

Conurus carolinensis (LINN.).

CAROLINA PAROQUET.

PLATE XXI.

Formerly quite a common resident in the eastern portion of the State, but as the settlements increased along the timbered streams—their natural home—they rapidly disappeared, and

for several years have ceased to be a resident, or even a visitant.

B. 63. R. 392. C. 460. G. 180, 147. U. 382.

HABITAT. Southern States; north casually to New York, Michigan and Wisconsin; regularly to Ohio, Illinois, and southern Nebraska; west to eastern Colorado.

SP. CHAR. "Head and neck, all round, gamboge yellow; the forehead, from above the eyes, with the sides of the head, pale brick red; body generally, with tail, green, with a yellowish tinge beneath. Outer webs of primaries bluish green, yellow at base; secondary coverts edged with yellowish; edge of wing yellow, tinged with red; tibia yellow; bill white; legs flesh color. *Young:* With head and neck green. *Female:* With head and neck green; the forehead, lores and suffusion round the eyes dark red, and without the yellow of tibia and edge of wing; size considerably less."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	13.50	22.75	7.70	7.00	.75	1.05
Female . . .	12.50	21.00	7.25	6.50	.70	1.00

Iris brown; bill white; legs and feet flesh color; claws bluish.

In the early settlement of the country, especially throughout their southern range, the birds were very abundant, but the demand has been so great for their gaudy feathers, with which to decorate the hats of the fair sex, as to stimulate the merciless hunter to slaughter; and they are now only to be looked for in diminished numbers within the unsettled timbered regions of the Indian Territory, Texas, Arkansas, Louisiana and Florida.

The birds are very social in their habits, moving about in flocks, and keeping near each other while on the wing or feeding, as well as when at rest. Their manner of flight is graceful and swift. Their notes loud, harsh and grating upon the ear, and, as they cannot be taught to talk, they are not desirable pets. They have to be kept in close confinement, for if given the liberty of the room, they will injure the furniture and fixtures, by biting and marring the same with their thick, powerful bills.

They feed indiscriminately upon berries, fruits, seeds and grains, with the exception of corn. I make this exception because I never saw the birds feeding upon corn, and those that I have kept in confinement would not, even when pressed with hunger, notice the same. Pecan nuts and cockle burs appear to be their favorite food; and it is surprising with what ease

and rapidity they grasp the shells, crush and extract the kernels. Their nests are usually placed in holes or hollow cavities in trees. In the spring of 1858, a small flock reared their young in a large hollow limb of a giant sycamore tree, on the banks of the Neosho River, near Neosho Falls, Kansas. I have never been able to procure their eggs. Ridgway says: "Eggs, 1.39x 1.07; ovate, short ovate, or rounded ovate; pure white." From the following paper of Mr. Brewster's, in "The Auk," Vol. 6, p. 336, the birds also probably nest in the branches of trees:

"While in Florida, during February and March, 1889, I questioned everybody whom I met regarding the nesting of the Paroquet. Only three persons professed any knowledge on this subject. The first two were both uneducated men—professional hunters of alligators and plume birds. Each of them claimed to have seen Paroquets' nests, which they described as flimsy structures, built of twigs, and placed on the branches of cypress trees. One of them said he found a nest only the previous summer (1888), while fishing. By means of his pole he tipped the nest over, and secured two young birds, which it contained.

"This account was so widely at variance with what has been previously recorded regarding the manner of nesting of this species, that I considered it, at the time, as a mere fabrication; but afterwards it was unexpectedly and most strongly corroborated by Judge R. L. Long, of Tallahassee. The latter gentleman, who, by the way, has a very good general knowledge of the birds of our Northern States, assured me that he had examined many nests of the Paroquet, built precisely as above described. Formerly, when the birds were abundant in the surrounding region, he used to find them breeding in large colonies in the cypress swamps. Several of these colonies contained at least a thousand birds each. They nested invariably in small cypress trees, the favorite position being on a fork, near the end of a slender, horizontal branch. Every such fork would be occupied, and he has seen as many as forty or fifty nests in one small tree. Their nests closely resemble those of the Carolina Dove, being similarly composed of cypress twigs, put to-

gether so loosely that the eggs were often visible from the ground beneath. The twigs of the cypress seemed to be preferred to those of any other kind of tree. The height at which the nests were placed varied from five or six feet to twenty or thirty feet. Mr. Long described the eggs as being of a greenish white color, unspotted. He did not remember the maximum number which he had found in one set, but thought it was at least four or five. He has often taken young birds from the nest, to rear or give to his friends. He knew of a small colony breeding in Waukulla swamp, about twenty miles from Tallahassee, in the summer of 1885, and believes that they still occur there in moderate numbers.

“It seems difficult to reconcile such testimony with the statements of Audubon, Wilson and others, that the Carolina Parquet lays its eggs in hollow trees. It may be, however, that, like the Crow Blackbird and some of the Owls, this Parrot nests both in holes and on branches, according to the circumstances; at all events, the above account has seemed to me to rest on evidence sufficiently good to warrant its publication.”

ORDER COCCYGES.

CUCKOOS, ETC.

Bill variable in form, but never chisel shaped at tip, the culmen usually more or less curved; tongue not extensible nor barbed at tip; feet zygodactyle, or else the middle or outer toes connected for at least half their length. (*Ridgway.*)

SUBORDER CUCULI. CUCKOOS, ETC.

Toes, two before, two behind. Bill as long as head, compressed, with cutting edges smooth; nostrils exposed; no distinct rictal bristles; tarsus nearly or quite as long as longest anterior toe (sometimes longer), naked for greater part of its length; anterior toes separated to extreme base; plumage without bright or metallic colors. (*Ridgway.*)

FAMILY CUCULIDÆ. CUCKOOS, ANIS, ETC.

“Bill compressed, usually more or less lengthened, and with decurved culmen. Rictal bristles few or none. Nostrils exposed; no nasal tufts. Tail long and soft, of eight to twelve feathers; Toes in pairs, deeply cleft or not united,

the outer anterior toe usually versatile, but directed rather laterally than backward."

SUBFAMILY COCCYGINÆ. AMERICAN CUCKOOS.

"Face covered with feathers; bill elongated, more or less cylindrical, straight or curved. Tail of ten feathers."

GENUS **GEOCOCCYX** WAGLER.

"Bill long and strong, slightly compressed, and at least as long as the head; head crested; loral feathers, and those at base of bill, stiffened and bristly. Nostrils elongated, linear. A naked colored skin around and behind the eye; the eyelids ciliated. Tarsi longer than toes; very stout. Wings very short and concave; the tertials as long as the primaries. Tail longer than the head and body; composed of ten narrow, much graduated feathers."

Geococcyx californianus (LESS.).

ROAD-RUNNER.

PLATE XXI.

Entered as an occasional visitant in the western part of the State, on the authority of Mr. Charles Dyer, division superintendent of the Atchison, Topeka & Santa Fe Railroad, at Las Vegas, New Mexico, who writes me that in September, 1884, he saw two of the birds near the railroad, and about fifteen miles east of the west line of Kansas, and that he had seen them quite often in Colorado, near the State line. The birds are known to breed in Colorado as far east as Las Animas, and I am inclined to think that they may occasionally breed within the southwestern limits of this State.

B. 68. R. 385. C. 427. G. 178, 148. U. 385.

HABITAT. Northern Mexico; north to southern Colorado, and California; east into Texas and southwestern Kansas.

SP. CHAR. "Tail very long; the lateral feathers much shortest. An erectile crest on the head. A bare skin around and behind the eyes. Legs very long and stout. All the feathers of the upper parts and wings of a dull metallic olivaceous green, broadly edged with white near the end. There is, however, a tinge of black in the green along the white line, which itself is suffused with brown. On the neck the black preponderates. The sides and under surface of the neck have the white feathers streaked centrally with black, next to which is a brownish suffusion. The remaining under parts are whitish, immaculate. Primary quills tipped with white, and with a median band across the outer webs. Central tail feathers olive brown; the others clear dark green, all edged and (except the central two) broadly tipped with white. Top of the head dark blackish blue. Size generally very variable."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	22.50	20.50	6.75	11.50	2.25	1.75
Female . . .	21.50	19.60	6.50	11.00	2.15	1.70

Iris pale grayish brown, the pupil encircled by a narrow yellow ring; the naked space around eyes, extending back to hind-neck, pale flesh color, sometimes with a yellowish hue; eyelids bright blue; bill dusky, with under pale bluish at base; legs and feet ashy blue; claws blackish.

These remarkable birds are terrestrial in their habits, and at home upon the sterile plains and lands dotted with mesquite and chaparral brush. They are very fleet of foot, and although they can fly with ease, and quite swiftly, prefer as a rule to escape by running, dodging and skulking. A solitary and usually a silent bird. I have occasionally heard them utter a few low, whistling, chattering notes. In their movements, generally run about in an apparently aimless manner, often stopping and jerking their tails (which are usually carried in an elevated manner) and assuming many grotesque and ludicrous positions. Their food consists chiefly of beetles, grasshoppers, snails, lizards and small, harmless snakes. I put no faith in the general belief and many stories told about their manner of killing the large rattlesnake; for, if they had the courage, they have not the strength of wing, bill or claws with which to successfully attack them. Their nests are placed upon a platform of sticks, in low trees, and upon bushes, and are built of twigs and weeds, with occasionally a slight lining of grasses. Eggs usually five to nine; as high as twelve have been found. They vary somewhat in size. A set of five, collected April 18, 1882, near Corpus Christi, Texas, measure: 1.62x1.19, 1.60x1.22, 1.60x1.21, 1.59x1.22, 1.58x1.23; in color, white to buffy white; in form, ovate.

GENUS *COCCYZUS* VIEILLLOT.

“Head without crest; feathers about base of bill soft; bill nearly as long as the head, decurved, slender, and attenuated towards the end. Nostrils linear. Wings lengthened, reaching the middle of the tail; the tertials short. Tail of ten graduated feathers. Feet weak; tarsi shorter than middle toe.”

Coccyzus americanus (LINN.).

YELLOW-BILLED CUCKOO.

PLATE XXI.

A summer resident; common. Arrive early in May; begin laying the last of May; return early in September; a few occasionally linger until the first of October.

B. 69. R. 387. C. 429. G. 178, 149. U. 387.

HABITAT. Eastern North America; south from New Brunswick, Canada, etc., to the West Indies and Costa Rica; west to eastern Mexico and the edge of the Great Plains. They are known to breed within their range as far south as the West Indies.

SP. CHAR. "Upper mandible and tip of lower black; rest of lower mandible, and cutting edges of the upper, yellow. Upper parts of a metallic greenish olive, slightly tinged with ash towards the bill; beneath white. Tail feathers (except the median, which are like the back) black, tipped with white for about an inch on the outer feathers, the external one with the outer edge almost entirely white. Quills orange cinnamon; the terminal portion and a gloss on the outer webs olive."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	12.25	16.60	5.75	6.00	1.00	1.00
Female . . .	11.60	16.00	5.55	5.50	1.00	.95

Iris brown; legs and feet bluish olive; claws horn blue.

This species is generally known as the "Rain Crow" or "Cow-bird;" the latter on account of its call notes: "Kow, kow, kow, kow, kow," uttered rapidly; the former because the birds are more noisy when the atmosphere is moist and warm, and their oft-repeated notes are therefore thought to be an indication of falling weather. Their notes are occasionally heard at night. They inhabit alike the deep, solitary woods, the open groves and prairie thickets. Their flight is noiseless, smooth and swift, gliding with ease through the thick trees and branches. The birds feed upon nearly all forms of insect life; even the ugly caterpillar is devoured with a relish. When the breeding season is over they feed freely upon berries.

The males arrive about eight days in advance of the females; their courtships are of short duration, and they soon commence making preparations for housekeeping.

Their nests, a loose, frail, flat structure made of sticks and

weeds, with at times a little grass, are placed in bushes, grapevines, and on the lower branches of trees, from five to fifteen feet from the ground. The males assist in hatching and rearing the young, and are fully as attentive as the females. They are said to occasionally lay eggs in the nests of other birds, but I think such cases exceptional, for they are too devoted parents to leave—unless by accident—the rearing of their young to others. In this respect they differ from their cousins the European Cuckoos, that are polygamous, and exhibit no paternal affection for their young.

The birds occasionally lay and sit at the same time, and it is not an unusual occurrence to find eggs and young birds of different ages in the same nest; but as a rule they lay, and hatch at one sitting, from three to five eggs, 1.25x.90; light bluish green; in form, rather elliptical.

***Coccyzus erythrophthalmus* (Wils.).**

BLACK-BILLED CUCKOO.

PLATE XXI.

A summer resident; not uncommon; but being of a shy and retiring nature, are not often noticed. Arrive the first of May, returning in September; begin laying the last of May. In my Revised Catalogue I entered this bird as rare, as I was only able to report the finding of two nests, one at Paola, the other at Manhattan. Several nests have since been found in the vicinity of Lawrence, Beatrice, and other places in the eastern portion of the State.

B. 70. R. 388. C. 428. G. 179, 150. U. 388.

HABITAT. Eastern North America; north to Labrador and Manitoba; west to the Rocky Mountains; south in winter to northern South America.

SP. CHAR. "Bill entirely black. Upper parts generally of a metallic greenish olive, ashy towards the base of the bill; beneath pure white, with a brownish yellow tinge on the throat. Inner webs of the quills tinged with cinnamon. Under surface of all the tail feathers hoary ash gray. All, except the central on either side, suffused with darker to the short, bluish white, and not well defined tip. A naked red skin round the eye."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	12.00	16.25	5.40	6.40	.92	.95
Female . . .	11.50	15.80	5.20	6.00	.92	.92

Iris brown; legs, feet and claws darkish blue.

These birds are similar in actions and habits to the Yellow-billed; but more inclined to nest in open groves, and bushes upon the uplands; and their nests are a little more compactly built, though at best a loose, flat structure. Eggs smaller, a shade darker, and more rounded in form.

SUBORDER ALCYONES. KINGFISHERS.

Toes, three before, one behind. (*Ridgway.*)

The outer and middle toes with basal phalanges united.

FAMILY **ALCEDINIDÆ**. KINGFISHERS.

Bill longer than head, with straight outlines, the cutting edges smooth (in all American species); tail much shorter than wing, with middle feathers (in American species) not longer than the rest; tarsus only about half as long as middle toe. (*Ridgway.*)

GENUS **CERYLE** BOIE.

"Bill long, straight and strong, the culmen slightly advancing on the forehead and sloping to the acute tip; the sides much compressed; the lateral margins rather dilated at the base and straight to the tip; the gonys long and ascending. Tail rather long and broad. Tarsi short and stout."

SUBGENUS **STREPTOCERYLE** BONAPARTE.

Wing 6.00, or more; tarsus about as long as hind toe, much shorter than inner anterior toe; plumage without metallic gloss. Upper parts plumbeous blue, or bluish plumbeous, more or less streaked with black (especially on top of head), the tail feathers transversely spotted with white, these markings usually more or less hidden in closed tail; chin, throat and collar round hindneck pure white. (*Ridgway.*)

Ceryle alcyon (LINN.).

BELTED KINGFISHER.

PLATE XXI.

A common summer resident, and, when the winters are mild, an occasional resident. Begin laying about the last of April.

B. 117. R. 382. C. 423. G. 177, 151. U. 390.

HABITAT. The whole of North America; south to Panama, including the West Indies.

SP. CHAR. "Head with a long crest. Above, ashy blue, without metallic luster. Beneath, with a concealed band across the occiput, and a spot anterior to the eye, pure white. A band across the breast, and the sides of the body under the wings, like the back. Primaries white on the basal half, the terminal spotted. Tail with transverse bands and spots of white. Female and young with sides of body and a band across the belly (below the pectoral one) light chestnut; the pectoral band more or less tinged with the same."

The birds vary somewhat in size; specimens examined, however, show the females fully as large as the males. The following is an average measurement:

<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
13.00	22.00	6.30	3.80	.40	2.00

Iris dark brown; bill black, or rather slate, with sides of upper to nostrils, and forks of under, pale blue; legs dull purple to greenish blue; feet dusky, bottoms pale, with a slight yellowish hue; claws black.

This widely distributed and solitary species appears to be as much at home in the Arctic regions as within the tropical, often remaining there until the ice closes their natural fishing grounds, and hunger forces them to seek for the finny tribe in similar open waters. Their favorite resorts are along the margins of ponds, and at the foot of shallow rapids, where they patiently watch from an overhanging limb, or perch, ready to dive for the unlucky minnow that approaches to the surface of the water, seldom failing to capture. They are equally successful on the wing, hovering for a time before plunging; in all cases carrying the catch to the nearest resting place, where they usually kill it by beating it against the perch, and always swallow the same head first.

In flight the motion of their wings is very rapid, and their course direct, and usually near the surface of the water. Their voice is shrill and harsh, much like the sound of a watchman's rattle.

Their nests are placed at the end of burrows, which the birds tunnel horizontally into the sides and near the tops of perpendicular or steep banks of streams, and occasionally into the sides of gravel banks, some distance from the water; are usually about two feet in depth, but have been known to extend over fifteen feet; in fact, not stopping work until a place is reached where they can safely rear their young without fear from falling earth or pebbles. At the end it is scooped out oven shaped for the nest, which is sometimes sparingly lined with grasses and feathers. Eggs five or six, 1.32x1.05; pure white; in form, oval.



PLATE XXII.

1. HAIRY WOODPECKER; Male. 2. FEMALE. 3. DOWNY WOODPECKER; Male. 4. FEMALE. 5. YELLOW-BELLIED SAPSUCKER; Male. 6. FEMALE. 7. RED-NAPED SAPSUCKER; Male. 8. FEMALE. 9. PILEATED WOODPECKER; Male. 10. FEMALE. 11. RED-HEADED WOODPECKER; Male. 12. FEMALE. 13. LEWIS'S WOODPECKER; Male. 14. FEMALE. 15. RED-BELLIED WOODPECKER; Male. 16. FEMALE. 17. FLICKER; Male. 18. FEMALE. 19. RED-SHAFTED FLICKER; Male. 20. FEMALE.

ORDER PICI.

WOODPECKERS, WRYNECKS, ETC.

Toes only two in front, or, if three, the middle and outer toes connected for at least half their length. Tail feathers stiff and more or less pointed, and bill more or less chisel-like. (*Ridgway.*)

FAMILY **PICIDÆ.** WOODPECKERS.

"Outer toe turned backwards permanently, not versatile laterally, the basal portion of the tongue capable of great protrusion."

GENUS **DRYOBATES** BOIE.

Without crest, and size small (wing not more than 5.00). Nasal groove extending nearly to top of bill; terminal half of bill not distinctly compressed. Tongue greatly extensile; plumage much varied with black (or brown) and white, the latter prevailing on lower parts. (*Ridgway.*)

Dryobates villosus (LINN.).

HAIRY WOODPECKER.

PLATE XXII.

Resident; common. Begin laying the last of April.

B. 74. R. 360. C. 438. G. 167. 152. U. 393.

HABITAT. Middle portion of the eastern United States, from the Atlantic coast to near the base of the Rocky Mountains.

SP. CHAR. "Above, black, with a white band down the middle of the back. All the middle and larger wing coverts and all the quills with conspicuous spots of white. Two white stripes on each side of the head; the upper scarcely confluent behind, the lower not at all so; two black stripes confluent with the black of the nape. Beneath white. Three outer tail feathers with the exposed portions white. Male with a nuchal scarlet crescent (wanting in the female) covering the white, generally continuous, but often interrupted in the middle. Immature birds of either sex with more or less of the whole crown spotted with red or yellow, or both, sometimes the red almost continuous."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	9.10	15.00	4.80	3.40	.85	1.20
Female . . .	8.75	14.75	4.70	3.25	.85	1.15

Iris brown; bill pale horn blue, darkest terminally, tips whitish; legs and feet bluish gray; claws black.

The natural home of this species is along the timbered streams and edges of woodlands, often frequenting the orchards and trees about our dwellings, especially during the winter months, though by no means as familiar a bird as the Downy. Their loud, clear, "Cheep," which they often repeat, announces their presence. They also have a strong, shrill, tremulous song or call note, and the usual family habit of drumming upon a dead limb or stub, and the same undulating manner of flight—an alternate rising and sinking, caused by closing the wings for an instant, after a few vigorous strokes to give them headway.

Their food consists chiefly of insects, their eggs and larvæ, which they extract from crevices in the bark, and by chipping circular holes through the same for the grub feeding upon the wood and destroying the life of the tree. They occasionally feed upon berries and the meat of nuts, but they are not a favorite food, as is the case with the Red-headed.

Their nesting places are at the bottom of circular holes, which they excavate in the decaying trunks, limbs or cavities in trees, which, in either case, they chip out to suit. The nests are quite a distance below the entrance. The males are dutiful husbands, and share alike the labors of nest making, hatching and rearing of the young. Eggs usually four, .96x.73; pure crystal white; in form, rather spherical.

***Dryobates pubescens* (LINN.).**

DOWNY WOODPECKER.

PLATE XXII.

Resident; common. Begin laying the last of April.

B. 76. R. 361. C. 440. G. 168, 153. U. 394.

HABITAT. Northern North America; south in the eastern portion to the Gulf coast.

SP. CHAR. "A miniature of *D. villosus*. Above, black, with a white band down the back. Two white stripes on the side of the head, the lower of opposite sides always separated behind, the upper sometimes confluent on the nape. Two stripes of black on the side of the head, the lower not running into the forehead. Beneath, white; all the middle and greater coverts and all the quills with white spots (the larger coverts with two series each); tertiaries or inner secondaries all banded with white. Two outer tail feathers white, with two bands of black at end; third white at tip (and externally); crissum sometimes

spotted with black. Male with red terminating the white feathers on the nape. Young with whole top of head red."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.60	11.75	3.65	2.55	.65	.69
Female . . .	6.50	11.60	3.55	2.40	.65	.67

Iris dark brown; bill slate blue; legs, feet and claws pale blue.

These restless, energetic little Woodpeckers are very similar in their actions and habits to the Hairy, but more social and less fearful of man. Wilson says:

"The principal characteristics of this little bird are diligence, familiarity, perseverance, and strength and energy in the head and muscles of the neck which are truly astonishing. Mounted on the infected branch of an old apple tree, where insects have lodged their corroding and destructive brood in crevices between the bark and wood, he labors sometimes for half an hour incessantly at the same spot before he has succeeded in dislodging and destroying them. At these times you may walk up pretty close to the tree, and even stand immediately below it, within five or six feet of the bird, without in the least embarrassing him. The strokes of his bill are distinctly heard several hundred yards off, and I have known him to be at work for two hours together on the same tree. Buffon calls this 'incessant toil and slavery,' their attitude 'a painful posture,' and their life 'a dull and insipid existence'—expressions improper because untrue, and absurd because contradictory. The posture is that for which the whole organization of his frame is particularly adapted, and though to a Wren or a Hummingbird the labor would be toil and slavery, yet to him it is, I am convinced, as pleasant and amusing as the sports of the chase to the hunter, or the sucking of flowers to the Hummingbird. The eagerness with which he traverses the upper and lower sides of the branches, the cheerfulness of his cry and the liveliness of his motions while digging in the tree and dislodging the vermin, justifies this belief. He has a single note, or 'Chink,' which, like the former species, he frequently repeats; and when he flies off or alights on another tree, he utters a rather shriller cry, composed of nearly the same kind of a note, quickly reit-

crated. In the fall and winter he associates with the Titmouse, Creeper, etc., both in their wood and orchard excursions, and usually leads the van. Of all our Woodpeckers, none rid the apple trees of so many vermin as this, digging off the moss which the negligence of the proprietor has suffered to accumulate, and probing every crevice. In fact, the orchard is his favorite resort in all seasons, and his industry is unequalled and almost incessant, which is more than can be said of any other species we have. In the fall he is particularly fond of boring the apple trees for insects, digging a circular hole through the bark just sufficient to admit his bill; after that a second, third, etc., in pretty regular horizontal circles around the body of the tree. These parallel circles of holes are often not more than an inch or an inch and a half apart, and sometimes so close together that I have covered eight or ten of them at once with a dollar. From nearly the surface of the ground up to the first fork, and sometimes far beyond it, the whole bark of many apple trees is perforated in this manner, so as to appear as if made by successive discharges of buckshot, and our little Woodpecker, the subject of the present account, is the principal perpetrator of this supposed mischief—I say supposed; for so far from these perforations of the bark being ruinous, they are not only harmless, but, I have good reason to believe, really beneficial to the health and fertility of the tree. I leave it to the philosophical botanist to account for this, but the fact I am confident of. In more than fifty orchards which I, myself, have carefully examined, those trees which were marked by the Woodpecker (for some trees they never touch, perhaps because not penetrated by insects) were uniformly the most thriving, and seemingly the most productive. Many of these were upwards of sixty years old, their trunks completely covered with holes, while the branches were broad, luxuriant, and loaded with fruit. Of decayed trees, more than three-fourths were untouched by the Woodpecker. Several intelligent farmers with whom I have conversed candidly acknowledged the truth of these observations, and with justice look upon these birds as beneficial; but the most common opinion is that they bore the

trees to suck the sap, and so destroy its vegetation, though pine and other resinous trees, on the juice of which it is not pretended that they feed, are often found equally perforated. Were the sap of the tree their object, the saccharine juice of the birch, the sugar maple and several others would be much more inviting, because more sweet and nourishing than that of either pear or apple tree; but I have not observed one mark on the former for ten thousand that may be seen on the latter; besides, the early part of the spring is the season when the sap flows most abundantly, whereas it is only during the months of September, October and November that Woodpeckers are seen so indefatigably engaged in orchards, probing every crack and crevice, boring through the bark, and, what is worth remarking, chiefly on the south and southwest sides of the tree, for the eggs and larvæ deposited there by the countless swarms of summer insects. These, if suffered to remain, would prey upon the very vitals (if I may so express it) of the tree, and in the succeeding summer give birth to myriads more of their race, equally destructive."

For the above supposed reason, the birds so beneficial, and in no sense injurious, are frequently misnamed "Sapsuckers," a term not applicable to any of our Woodpeckers, except genus *Sphyrapicus*.

The nests are excavated in decaying limbs, or bodies of small trees, usually ten to fifteen feet from the ground (the apple tree a favorite); the entrance round and just large enough to admit the bird, then smoothly chipped downward for several inches, and enlarged to fit the body. Eggs four or five, rarely six, .75 x .58; pure crystal white; in form, rather subspherical.

GENUS *SPHYRAPICUS* BAIRD.

"Bill as in *Picus*, but the lateral ridge, which is very prominent, running out distinctly to the commissure at about its middle, beyond which the bill is rounded, without any angles at all. The culmen and gonys are very nearly straight, but slightly convex, the bill tapering rapidly to a point; the lateral outline concave to very near the slightly beveled tip. Outer pair of toes longest; the hinder exterior rather longest; the inner posterior toe very short, less than the inner anterior without its claw. Wings long and pointed; the third, excluding the spurious, longest. Tail feathers very broad, abruptly acuminate, with a very long linear tip. Tongue scarcely extensible."

Sphyrapicus varius (LINN.).
YELLOW-BELLIED SAPSUCKER.

PLATE XXII.

Migratory; rare. Arrive the last of March to middle of April; return in October.

B. 85. R. 369. C. 446. G. 169, 154. U. 402.

HABITAT. North America, north and east of the Rocky Mountain slope; breeding from the northern United States northward; south in winter throughout Mexico, to Guatemala; West Indies.

SP. CHAR. "Third quill longest; second a little shorter; first between fourth and fifth, considerably shorter. General color above black, much variegated with white. Feathers of the back and rump brownish white, spotted with black. Crown crimson, bordered by black on the sides of the head and nape. A streak from above the eye, a broad stripe from the bristles of the bill, passing below the eye and into the yellowish of the belly, enclosing a black postocular one, and a stripe along the edges of the wing covert, white. A triangular broad patch of scarlet on the chin, bordered on each side by black stripes from the lower mandible, which meet behind and extend into a large quadrate spot on the breast. Rest of under parts yellowish white, or yellow, streaked and banded on the sides with black. Inner web of inner tail feather white, spotted with black. Outer feathers black, edged and spotted with white. Quills spotted with white. Female with the red of the throat replaced by white. Immature bird without black on the breast, or red on top of the head, as in every intermediate stage to the perfect plumage."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.50	15.75	5.00	3.20	.80	1.00
Female	8.00	15.25	4.90	3.10	.80	.90

Iris brown; bill and claws brownish black; legs and feet olive green.

This is about the western limit of this attractive migrant; eastward it is a common bird, breeding chiefly north of the United States, seldom south of 42°. These birds are rather silent as a rule, but at times noisy, uttering harsh, querulous notes, and are great drummers. They are not shy or suspicious; visiting the orchards and trees about dwellings. Their tongues are only slightly extensile, not long enough to probe for and successfully reach the wood-eating larva, as is the case with all of our Woodpeckers not of this genus; and they therefore hunt more like the Nuthatches and Creepers, for the various forms of

insect life. They are also known to feed upon the live, soft inner bark of trees, often injuring the tree by chipping out here and there patches of the bark, and for this reason are called "Sapsuckers."

Their nests are excavated in dead or decaying trees, from fifteen to sixty feet from the ground. Eggs four to seven. A set of four, taken at Pewaukee, Wisconsin, from a hole excavated in an ash tree, measure: .88x.69, .88x.66, .86x.66, .85x.65. This nest was about fifteen inches below the entrance, and twenty feet from the ground. Another set of four eggs, taken May 30th, 1886, near Bayfield, Wisconsin, from a nest in a green poplar tree, thirty feet from the ground, measure: .89x.68, .90x.69, .90x.70, .92x.68; pure glossy white; in form, oblong to subspherical.

Sphyrapicus varius nuchalis BAIRD.

RED-NAPED SAPSUCKER.

PLATE XXII.

In the western part of the State, migratory; rare. I have met with the birds but twice in the State, each time on the south fork of the Smoky Hill River, near Wallace.

B. 86. R. 369a. C. 447. G. —, 155. U. 402a.

HABITAT. Rocky Mountain regions of the United States; south into the mountains of Mexico.

SP. CHAR. "Markings generally as in *S. varius*. A red nuchal crescent. Belly yellowish white. The red of the throat extending over and obliterating the black stripe from the lower mandible, except on the side of the jaw. Post-ocular black patch tinged with red. Secondaries with little or no white on outer webs. Tail feathers black (scarcely varied), the innermost with inner web (as in *varius*). Female similar, but with the chin white; the throat red, bordered (as in the male) by a black stripe from the bill to the black pectoral patch."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.50	15.40	4.95	3.30	.80	.90
Female . . .	8.30	15.00	4.75	3.20	.80	.90

Iris brown; bill and claws slate black; legs and feet pale greenish olive.

This Western variety of the Yellow-bellied is very similar in its habits and actions. They are to be looked for during the summer months in the high, mountainous regions. The aspen

tree seems to be their favorite. As the cold weather approaches, they seek the valleys and work their way southward, wintering among the cottonwoods and willows skirting the streams. I have found them quite common in suitable localities that I have visited within their range.

Their nests are excavated chiefly in live trees, usually the aspen, the center of the tree showing signs of decay. The cavities are gourd shaped and quite roomy; and I have found them ranging all the way from five to forty feet from the ground. Eggs usually four or five; average dimensions, as given by Ridgway, .87x.65. A set of four, collected near Fort Garland, Colorado, measure: .84x.66, .84x.69, .85x.68, .86x.69; pure lustrous white, with a pinkish hue before blowing; vary in form from almost subspherical to ovate.

GENUS **CEOPHLEUS** CABANIS.

"Bill a little longer than the head; considerably depressed, or broader than high at the base; shaped much as in *Campephilus*, except shorter, and without the bristly feathers directed forwards at the base of the lower jaw. Gonys about half the length of the commissure. Tarsus shorter than any toe, except the inner posterior. Outer posterior toe shorter than the outer anterior, and a little longer than the inner anterior. Inner posterior very short, not half the outer anterior, about half the inner anterior one. Tail long, graduated; the longer feathers much incurved at the tip. Wing longer than the tail, reaching to the middle of the exposed surface of tail; considerably graduated, though pointed; the fourth and fifth quills longest. Color uniform black. Head with pointed occipital crest. A stripe from the nasal tufts beneath the eye and down side of neck, throat, lining of wing, and basal portion of under surface of quills, white; some species with the abdomen and sides barred black and brownish white; other with a white scapular stripe in addition. Male with whole crown and crest and maxillary patch red; female with only the crest red."

Ceophlœus pileatus (LINN.).

PILEATED WOODPECKER.

PLATE XXII.

Not an uncommon resident along the streams, in heavily wooded bottom lands. Begin laying about the first of April.

B. 90. R. 371. C. 432. G. 170, 156. U. 405.

HABITAT. Said by other writers to be found in the heavily wooded districts of North America at large. I have never met

with the birds south of the United States, and I fail to find any record of their occurrence north of 62°.

SP. CHAR. "Fourth and fifth quills equal and longest; third intermediate between sixth and seventh. Bill blue black; more horn color beneath. General color of body, wings and tail, dull greenish black. A narrow white streak from just above the eye to the occiput; a wider one from the nostril feathers (inclusive), under the eye and along the side of the head and the neck; sides of the breast (concealed by the wing), axillars, and under wing coverts, and concealed bases of all the quills, with chin, and beneath the head, white, tinged with sulphur yellow. Entire crown, from the base of the bill to a well-developed occipital crest, as also a patch on the ramus of the lower jaw, scarlet red. A few faint white crescents on the sides of the body and on the abdomen. Longer primaries generally tipped with white.

"Female without the red on the cheek, and the anterior half of that on the top of the head replaced by black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	18.50	29.00	9.60	7.25	1.35	2.20
Female . . .	16.00	27.25	9.00	6.00	1.30	2.00

Iris yellow; bill, upper dark horn blue, under sky blue, with tips slate black; tarsus, feet and claws black.

These birds were formerly quite common, but being of a shy and solitary nature, they are fast disappearing wherever the settlements invade their forest home. Their manner of flight is undulating, like that of the family, but very strong and well sustained. Their loud, cackling notes and vigorous strokes of the bill break the stillness that surrounds them. Their large size, energy and strength enable them to chip off large patches of bark, and make the decaying wood fly, in their search for insect life. Ants appear to be a favorite food, and when they lay dormant during the winter months in hollows at the base and center of live trees, I have known these birds to chisel in solid hard wood to the depth of four and five inches, or until the ants are reached. They also occasionally feed upon berries, nuts, etc.

Their nesting places are usually excavated in the trunks of tall trees, ranging from about twenty to eighty feet from the ground. Eggs four to six; pure glossy, pearly white; in form, elliptical to elongate ovate. A set of five eggs, taken April 18th, 1887, near Giddings, Texas, from the dead top of a pin oak, twenty-five feet from the ground, measure: 1.26x.96, 1.33x.96, 1.37x.96, 1.38x.97, 1.41x.97.

GENUS **MELANERPES** SWAINSON.

"Bill about equal to the head; broader than high at the base, but becoming compressed immediately anterior to the commencement of the gonys. Culmen and gonys with a moderately decided angular ridge; both decidedly curved from the very base. A rather prominent acute ridge commences at the base of the mandible, a little below the ridge of the culmen, and proceeds but a short distance anterior to the nostrils (about one-third of the way), when it sinks down and the bill is then smooth. The lateral outlines are gently concave from the basal two-thirds; then gently convex to the tip, which does not exhibit any abrupt beveling. Nostrils open, broadly oval; not concealed by the feathers, nor entirely basal. Fork of chin less than half lower jaw. The outer pair of toes equal. Wings long, broad, lengthened. Tail feathers broad, with lengthened points.

"The species all have the back black, without any spots or streaks anywhere."

SUBGENUS **MELANERPES**.

Back, scapulars and wing coverts plain glossy blackish (grayish, indistinctly barred with dusky in the young of *M. erythrocephalus*). Lower parts, rump and upper tail coverts white; plumage of neck and lower parts soft, blended; wing less than 6.00. (*Ridgway*.)

Melanerpes erythrocephalus (LINN.).

RED-HEADED WOODPECKER.

PLATE XXII.

Summer resident; common. Occasionally linger into the winter. Begin laying about the middle of May.

B. 94. R. 375. C. 453. G. 172, 157. U. 406.

HABITAT. Eastern provinces of the United States, westward to within the Rocky Mountains, and occasionally to California.

SP. CHAR. "Head and neck all round crimson red, margined by a narrow crescent of black on the upper part of breast. Back, primary quills and tail bluish black. Under parts generally, a broad band across the middle of the wings, and the rump, white. The female is not different. Bill bluish white, darker terminally; iris chestnut; feet olive gray. *Young:* Without any red, the head and neck being grayish streaked with dusky; breast with an ashy tinge, and streaked sparsely with dusky; secondaries with two or three bands of black; dorsal region clouded with grayish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	9.50	17.50	5.50	3.35	.85	1.00
Female . . .	9.25	17.00	5.40	3.30	.85	1.00

Iris dark brown; bill light blue, darkest along the ridge and at tips; legs and feet olive blue; claws black.

These familiar birds are at home in the woods, the groves, and where there are solitary trees or telegraph poles upon the prairies and treeless plains. They are very social and playful in their habits, and are often to be seen, at all seasons of the year, chasing each other in the air, and playing hide-and-seek around the bodies of trees and among the branches. They are also quite successful as flycatchers, and seem at times to enjoy darting for the same, and returning to their perch. (This is not an unusual habit with many of the family.) Their notes are sharp and tremulous, and sound much like the voice of the tree frog. Their food consists of the various forms of insect life, grains, berries and fruits of all kinds, and for the latter reason are in bad repute with the farmer; but I think the good they do in the destruction of injurious worms, etc., more than pays for the share they claim at the harvest. But they do have a bad habit of marring the steeples of churches, and the cornices of dwellings, by not only chipping holes in various places, in their search for nesting places, but by drumming upon the boards.

Their nests are deep, round holes, gourd shape at the bottom, chipped out by the birds in dead or decaying limbs, trunks of trees, etc. Eggs four to six; varying in size. A set of four eggs, taken June 1st, 1877, at Pewaukee, Wisconsin, from a nest in a stub about twenty feet from the ground, measure: 1.00 x .79, 1.01 x .74, 1.02 x .77, 1.02 x .76; pure transparent white; in form, rather elliptical to oblong ovate.

SUBGENUS ASYNDESMUS COUES.

Bill almost colapline in general aspect, but with short, distinct lateral ridges, as in *Melanerpes*; as long as head, rather longer than tarsus, not broader than high at base, compressed and somewhat curved toward end; pointed, with scarcely any lateral beveling. Culmen curved and scarcely ridged; gonys straight. Wings of excessive length, folding nearly to end of tail, and peculiar in proportion of primaries; fourth quill longest, third and fifth about equal and shorter than second. Inner anterior claw reaching little beyond base of outer anterior. Feathers of under parts and of a nuchal collar, with the fibrilla of their colored portions, enlarged in caliber, bristly, of silicious hardness, loosened and disconnected, being devoid of barbicels and hooklets. Dorsal plumage compact, of intense metallic luster. Feathers of face soft and velvety. Sexes alike; young different. (*Coues.*)

Melanerpes torquatus (WILS.).**LEWIS'S WOODPECKER.**

PLATE XXII.

Taken at Ellis by Dr. Watson, May 6th, 1878; one specimen was obtained from a flock of six or eight.

B. 96. R. 376. C. 456. G. 173, 158. U. 408.

HABITAT. Western United States; east to the Black Hills and western Texas.

SP. CHAR. "Feathers on the under parts bristle-like. Fourth quill longest; then third and fifth. Above, dark glossy green. Breast, lower part of neck, and a narrow collar all round, hoary grayish white. Around the base of the bill, and sides of the head to behind the eyes, dark crimson. Belly blood red, streaked finely with hoary whitish. Wings and tail entirely uniform dark glossy green. Female similar. Young without the nuchal collar, and the red of head replaced by black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	11.00	21.50	6.75	4.20	.90	1.25
Female . . .	10.75	20.75	6.50	4.00	.90	1.15

Iris brown; bill and claws black; legs and feet slate color.

This remarkable Woodpecker inhabits the pine and oak districts of the Rocky Mountain region, often in the summer months reaching an elevation of over 7,500 feet, moving on the approach of winter into the foothills and southward. It differs in many respects from the usual habits and actions of the family. When going any distance its flight is high and direct, and accomplished with regular strokes of the wings; but flights from tree to tree are more or less undulating. It alights and hops about in the branches much like our regular perchers, and would hardly be taken for a Woodpecker, unless observed while climbing about over the trunks of trees, pecking here and there in search for insects and their larva. It is an expert flycatcher, and seems to delight in chasing and catching the festive grasshoppers, that (in their season) take regular afternoon aerial flights. It is also a shy, wary bird of the tree tops, seldom visiting the ground; and as a rule rather silent, except during the mating season, when they are quite noisy.

Their nests are usually excavated near the tops of tall, isolated, dead or decaying pine trees. I have often found the birds nesting in Colorado and New Mexico, but never low enough to be

able to collect their eggs, which are said to be four to six; from the various measurements that I have examined, $1.07 \times .84$ is, I think, about the average size; in form, rather subspherical.

SUBGENUS CENTURUS SWAINSON.

"Back and wings banded transversely with black and white. Crown more or less red; rest of head, with under parts, grayish, and with red or yellow tinge on the middle of the abdomen. Rump white."

Melanerpes carolinus (LINN.).**RED-BELLIED WOODPECKER.**

PLATE XXII.

Resident; abundant. Begin laying early in April.

B. 91. R. 372. C. 450. G. 171, 159. U. 409.

HABITAT. Eastern United States; west to eastern base of the Rocky Mountains; south to Florida and central Texas; rare or accidental east of the Hudson River.

SP. CHAR. "Third, fourth and fifth quills nearly equal, and longest; second (or outermost) and seventh about equal. Top of head and nape crimson red. Forehead whitish, strongly tinged with light red, a shade of which is also seen on the cheek, still stronger on the middle of the belly. Under parts brownish white, with a faint wash of yellowish on the belly. Back, rump and wing coverts banded black and white; upper tail coverts white, with occasional blotches. Tail feathers black, first transversely banded with white; second less so; all the rest with whitish tips. Inner feathers banded with white on the inner web; the outer web with a stripe of white along the middle. Female with the crown ashy; forehead pale red; nape bright red."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.00	17.00	5.30	3.50	.82	1.15
Female . . .	9.60	16.50	5.20	3.30	.82	1.10

Iris bright red; bill and claws black; legs and feet greenish blue.

This restless, noisy species prefers for its home the timbered bottom lands bordering the streams; but it is by no means a shy or wary bird, often visiting, and occasionally breeding in, the groves and trees about our upland dwellings. And in its search for food, regardless of our presence, it climbs in its usual spiral or zigzag manner the trees and their branches, boldly uttering now and then its familiar "Chaw-chaw"; darting off occasionally to catch a passing insect upon the wing. Its flight

is undulating, and its habits in many respects like the Red-headed, but it is not so much of an upland bird, or lover of berries and fruits, and therefore more respected by the farmer.

Their nests are excavated in stubs and decaying trunks and branches of trees, ranging from fifteen to forty feet from the ground. Eggs four or five, occasionally six. A set of five eggs, collected April 14th, 1878, at Neosho Falls, Kansas, measure: 1.00x.70, 1.00x.71, 1.02x.71, 1.02x.74; pure transparent white, the air sac or circular spot at larger end chalky white; in form, rather elliptical to oblong oval. They were taken from a nest in the trunk of a small, leaning walnut tree, about thirty feet from the ground; entrance on the under side, a round hole just large enough to admit the birds, enlarged below from four to five inches, and twelve inches in depth; a very roomy nest, no lining; eggs laid on the soft, rotten wood.

GENUS **COLAPTES** SWAINSON.

“Bill slender, depressed at the base, then compressed. Culmen much curved gonys straight; both with acute ridges, and coming to quite a sharp point with the commissure at the end; the bill consequently not truncate at the end. No ridges on the bill. Nostrils basal, median, oval and exposed. Gonys very short, about half the culmen. Feet large; the anterior outer toe considerably longer than the posterior. Tail long, exceeding the secondaries; the feathers suddenly acuminate, with elongated points.”

Colaptes auratus (LINN.).

FLICKER.

PLATE XXII.

Resident; common. Begin laying the last of April.

B. 97. R. 378. C. 457. G. 174, 160. U. 412.

HABITAT. Eastern North America; north to Hudson's Bay; west to the eastern slope of the Rocky Mountains; also reported from Alaska, where we would only naturally look for the Northwestern Flicker.

SP. CHAR. “Shafts and under surfaces of wing and tail feathers gamboge yellow. *Male*: With a black patch on each side of the cheek. A red crescent on the nape. Throat and stripe beneath the eye pale lilac brown. Back glossed with olivaceous green. *Female*: Without the black cheek patch.

ADDITIONAL CHARACTERS. “A crescentic patch on the breast, and rounded spots on the belly, black. Back and wing coverts with interrupted transverse

bands of black. Neck above and on the sides ashy. Beneath, pale pinkish brown, tinged with yellow on the abdomen, each feather with a heart-shaped spot of black near the end. Rump white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	12.50	20.00	6.20	4.50	1.10	1.30
Female . . .	12.25	19.50	6.15	4.35	1.10	1.25

Iris dark brown; bill slate blue; legs and feet ashy or light lead color; claws horn blue.

This well known, familiar bird is as much at home on our prairies as within the wooded districts. Mr. Langille, in his interesting work, "Our Birds in their Haunts," says:

"Next to the Robin, Bluebird or Barn Swallow, few members of the feathered tribes are better known than the 'Flicker,' 'High-hole,' 'Yellow-hammer,' etc., for the Golden-wing is known by all these names. His several notes are among the most characteristic sounds of spring, at which time he is thoroughly noisy. Coming from the South in large numbers, late in March or early in April, ascending some tall, dry tree top, at early dawn, he announces himself, either by a sonorous rapping on the dry wood, or by a loud squealing, but jovial call, "Chee-ah, chee-ah," which, once noted, is not easily forgotten. But even this latter is not half so awakening as a certain prolonged strain, nearly two syllables in regular repetition, something like "Whric'k-ah, whric'k-ah, whric'k-ah, whric'k-ah, whric'k-ah, whric'k-ah." This vocal performance, meant for a song, no doubt, is a mere rollicking racket, toned down, indeed, amidst the many voices of spring, and even rendered pleasing by its good-natured hilarity. How significant is that little love note, "Yu-cah," half guttural, half whisper, which he repeats at intervals, as he flits about the solitude of the forest in spring, or plays bo-peep with his lover, around the broken-off top or limb of some dead tree.

"His flight is swift, vigorous and dashing; is performed in curves by a few flaps of the wings, curving upward several feet, when alighting on the trunk of a tree, but ending horizontally when alighting crosswise on a limb, after the manner of perching birds. In manner, as in structure, he is not precisely like

the rest of his family. At home anywhere, from the tallest tree top to the ground, and always in a hurry when afoot, he will capture his insect food after the manner of Robins and Sparrows. Ants of all sizes are especially in favor with him."

Berries, fruits, nuts and grains also help to make up their bill of fare. They usually select for a nesting place an old stub or decaying tree, and readily excavate a hole or dress up a cavity in the same to suit, and where suitable trees are not convenient to their chosen homes, they will chip through cornices and into nooks in outbuildings—in fact, take possession of most any dark suitable cavity. Eggs usually five to seven; a much larger number have occasionally been found, but in such cases I am inclined to think other females assisted, although, when robbed of the egg as laid, the bird will often continue laying to the number of twenty and upward. They vary much in size. Ridgway says, 1.10x.85; I make the average dimensions of a few sets to be 1.06x.84; pure pearly white; in form, rather elliptical to oblong ovate. A set collected May 11th, 1878, at Pewaukee, Wisconsin, only measure: 1.00x.81, 1.03x.80, 1.03x.82, 1.05x.82.

Colaptes cafer (GMEL.).

RED-SHAFTED FLICKER.

PLATE XXII.

Resident; rare in the eastern part of the State, common in the western. Begin laying the last of April to first of May.

B. 98. R. 378b. C. 459. G. 176, 161. U. 413.

HABITAT. Western United States, except the northwest coast and Lower California; south into southern Mexico.

SP. CHAR. "Shafts and under surface of wing and tail feathers orange red. Male with a red patch on each side of the cheek; nape without red crescent; sometimes very faint indications laterally. Throat and stripe beneath the eye bluish ash. Back glossed with purplish brown. Female without the red cheek patch."

ADDITIONAL CHARACTERS. "Spots on the belly, a crescent on the breast, and interrupted transverse bands on the back, black."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	12.75	20.50	6.40	4.75	1.10	1.45
Female . . .	12.50	20.00	6.25	4.50	1.10	1.40

Iris dark brown; bill dark slate blue; legs and feet light or ashy blue; claws horn blue.

The habits and actions of this western and somewhat larger species appear to be identical with those of *C. auratus*. In treeless, unsettled localities, they are often found nesting in the sides of steep banks, excavating their burrows like the Kingfisher.

A set of four eggs, collected May 6th, 1879, near Fort Garland, Colorado, from a nest in a pine tree, about twelve feet from the ground, are, in dimensions: 1.12x.89, 1.13x.88, 1.13x.88, 1.14x.89; not distinguishable from the eggs of *C. auratus*, except by their larger size.

ORDER MACROCHIRES.

GOATSUCKERS, SWIFTS, ETC.

Bill without soft swollen cere. Wings very long, with ten quills, tail of ten feathers, and gape very wide and deeply cleft; or else bill long and slender, tongue extensile, and secondaries only six in number. (*Ridgway.*)

SUBORDER CAPRIMULGI. GOATSUCKERS, ETC.

"Secondaries more than six; bill short, very broad at base, the gape deeply cleft; plumage not metallic."

Middle toe much longer than lateral toes, its claws with inner edge pectinated; gape more or less distinctly bristled; plumage much spotted, the feathers soft, with downy or moth-like surface. (*Ridgway.*)

FAMILY CAPRIMULGIDÆ. GOATSUCKERS, ETC.

"Bill very short, the gape enormously long and wide, opening to beneath or behind the eyes. Culmen variable. Toes connected by a movable skin; secondaries lengthened; plumage soft, sometimes very full and loose, as in the Owls."

GENUS ANTROSTOMUS GOULD.

"Bill very small, with tubular nostrils, and the gape with long, stiff, sometimes pectinated bristles projecting beyond the end of the bill; tarsi moderate, partly feathered above; tail broad, rounded; wings broad and rounded; first quill shorter than third; plumage soft and lax."

Antrostomus vociferus (WILS.).

WHIP-POOR-WILL.

PLATE XXIII.

Summer resident; rare; quite common during migration in the eastern portion of the State. Arrive the middle of May; begin laying the latter part of May; return in September.

B. 112. R. 354. C. 397. G. 163, 162. U. 417.

HABITAT. Eastern United States to the Plains; north to Nova Scotia, Manitoba, etc.; south in winter to Guatemala.

SP. CHAR. "Bristles without lateral filaments; wings about 6.50 inches long; top of head ashy brown, longitudinally streaked with black; terminal half of the tail feathers (except the four central) dirty white on both outer and inner webs. In this species the bristles at the base of the bill, though stiff and long, are without the lateral filaments of the Chuck-will's-widow. The wings are rather short; the second quill longest; the first intermediate between the third and fourth; the tail is rounded; the outer feathers about half an inch shorter than the middle ones. The colors of this species are very difficult to describe, although there is quite a similarity to those of *A. carolinensis*, from which its greatly inferior size will at once distinguish it. The top of the head is ashy gray, finely mottled, with a broad median stripe of black; all the feathers with a narrow stripe of the same along their centers; the back and rump are somewhat similar, but of a different shade. There is a collar of white on the under side of the neck, posterior to which the upper part of the breast is finely mottled, somewhat as on the top of the head; the belly is dirty white, with indistinct transverse bands and mottlings of brown. The wings are brown; each quill with a series of round rufous spots on both webs, quite conspicuous on the outer side of the primaries when the wings are folded. The terminal half of the outer three tail feathers is of a dirty white. The female is smaller; the collar on the throat is tinged with fulvous. The conspicuous white patch of the tail is wanting, the tips only of the outer three feathers being of a pale brownish fulvous."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.20	18.75	6.40	5.15	.60	.44
Female . . .	10.00	18.25	6.20	5.00	.60	.44

Iris bluish black; bill and claws black; legs and feet grayish brown.

This bird of the night secretes itself, during the day, in the deep, shady thickets, and were it not for its oft-repeated and familiar voice, (heard during the mating season, and occasionally late in autumn,) its presence, even when quite common, would seldom be known, as it does not leave its secluded retreats until the shades of evening darken, and the silvery bugle



PLATE XXIII.

1. WHIP-POOR-WILL; Female.
2. POOR-WILL; Female.
3. FROSTED POOR-WILL; Female.
4. NIGHTHAWK; Male.
5. JUNCO; Female.
6. CHIMNEY SWIFT; Male.
7. RUBY-THROATED HUMMINGBIRD; Male.
8. RUBY-THROATED HUMMINGBIRD; Female.
9. SCISSOR-TAILED FLYCATCHER; Male.
10. SCISSOR-TAILED FLYCATCHER; Female.
11. KINGBIRD; Male.
12. KINGBIRD; Female.
13. ARKANSAS KINGBIRD; Male.
14. ARKANSAS KINGBIRD; Female.
15. CRESTED FLYCATCHER; Male.
16. CRESTED FLYCATCHER; Female.
17. OLIVE-SIDED FLYCATCHER; Male.
18. OLIVE-SIDED FLYCATCHER; Female.
19. OLIVE-SIDED FLYCATCHER; Male.
20. SAY'S PHOEBE; Male.
21. SAY'S PHOEBE; Female.
22. SAY'S PHOEBE; Male.
23. SAY'S PHOEBE; Female.

notes of the Wood Thrush—one of the latest of the day songsters—are hushed. Wilson says:

“This is a singular and very celebrated species, universally noted, over the greater part of the United States, for the loud reiterations of its favorite call in spring; and yet, personally, is but little known, most people being unable to distinguish this from the preceding species (Nighthawk), when both are placed before them, and some insist that they are the same. This being the case, it becomes the duty of his historian to give a full and faithful delineation of his character, and peculiarity of manners, that his existence as a distinct and independent species may no longer be doubted, nor his story mingled confusedly with that of another. I trust that those best acquainted with him will bear witness to the fidelity of the portrait.

“On or about the 25th of April, if the season be not uncommonly cold, the Whip-poor-will is first heard in this part of Pennsylvania, in the evening, as the dusk of twilight commences, or in the morning, as soon as dawn has broke. In the State of Kentucky, I first heard this bird on the 14th of April, near the town of Danville. The notes of this solitary bird, from the ideas which are naturally associated with them, seem like the voice of an old friend, and are listened to by almost all with great interest. At first they issue from some retired part of the woods, the glen or mountain; in a few evenings, perhaps, we hear them from the adjoining coppice, the garden fence, the road before the door, and even from the roof of the dwelling house, long after the family have retired to rest. Some of the more ignorant and superstitious consider this near approach as foreboding no good to the family—nothing less than sickness, misfortune or death to some of its members. These visits, however, so often occur without any bad consequences, that this superstitious dread seems to be on the decline.

“He is now a regular acquaintance. Every morning and evening his shrill and rapid repetitions are heard from the adjoining woods; and when two or more are calling out at the same time, as is often the case in the pairing season, and at no great distance from each other, the noise, mingling with the

echoes from the mountains, is really surprising. Strangers in parts of the country where these birds are numerous find it almost impossible for some time to sleep, while to those long acquainted with them the sound often serves as a lullaby to assist their repose.

“These notes seem pretty plainly to articulate the words which have been generally applied to them, Whip-poor-will, the first and last syllables being uttered with great emphasis, and the whole is in about a second to each repetition; but, when two or more males meet, their Whip-poor-will altercations become much more rapid and incessant, as if each were straining to overpower or silence the other. When near, you often hear an introductory cluck between the notes. At these times, as well as at almost all others, they fly low, not more than a few feet from the surface, skimming about the house and before the door, alighting on the wood pile or settling on the roof. Towards midnight they generally become silent, unless in clear moonlight, when they are heard with little intermission till morning. If there be a creek near, with high, precipitous, bushy banks, they are sure to be found in such situations. During the day they sit in the most retired, solitary and deep-shaded parts of the woods, generally on high ground, where they repose in silence. When disturbed, they rise within a few feet, sail low and slowly through the woods for thirty or forty yards, and generally settle on a low branch or on the ground. Their sight appears deficient during the day, as, like Owls, they seem then to want that vivacity for which they are distinguished in the morning and evening twilight. They are rarely shot or molested; and, from being thus transiently seen in the obscurity of dusk or in the deep umbrage of the woods, no wonder their particular markings of plumage should be so little known, or that they should be confounded with the Nighthawk, whom in general appearance they so much resemble.”

The birds make no nest. Eggs two; laid in a depression on the ground, among the leaves in thickets and heavily-wooded lands. A set collected June 5th, 1871, at Pewaukee, Wisconsin, in the woods, under a thick growth of bushes, measure: 1.09 x

.80, 1.12 x .78; cream white, irregularly spotted and mottled with lavender and pale brown; in form, elliptical.

GENUS **PHALÆNOPTILUS** RIDGWAY.

Tarsus longer than middle toe; entirely naked in front; first quill shorter than fourth. Tail even, much shorter than wing; the latter less than 6.00; quills without white patch. (*Ridgway.*)

Phalænoptilus nuttalli (AUD.).

POOR-WILL.

PLATE XXIII.

Summer resident; common. Arrive the last of April to first of May; begin laying the last of May; return in September.

B. 113. R. 355. C. 398. G. 164, 163. U. 418.

HABITAT. Western United States; east into Iowa and Missouri; south into Mexico.

SP. CHAR. *Adult male*: Top of head soft, velvety grayish, barred with dusky; under tail coverts plain buff; upper parts in general, soft brownish gray, with a very velvety, moth-like surface, relieved by irregular spottings and zigzags of black, the outer webs of the quills spotted with deep buff or ochraceous; throat with a large, transverse patch of white; other lower parts (except tail coverts) barred with blackish and light buffy; tail feathers (except middle pair) broadly tipped with white. *Adult female*: Similar to the male, but usually with white tips to tail feathers narrower. *Young*: Much like adult, but colors above more silvery gray, mixed more or less with bright rusty or ochraceous, the black markings smaller and less distinct, the white of throat and tail reduced in extent, and tinged with ochraceous or rusty. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.80	16.50	5.65	3.70	.70	.40
Female	7.60	16.00	5.45	3.60	.70	.40

They vary in size.

Iris dark brown; bill and claws black; legs reddish purple; feet dark brown; edges of scales whitish.

These nocturnal birds inhabit the upland prairies and plains. Their favorite resorts are rocky, bluffy grounds, where at night during the breeding season and at intervals afterward they announce their presence by their oft-repeated wailing song, "Poor-will." On the wing they are quite swift, skimming over the ground in an easy, circling course, usually uttering a clucking note as they fly; but when flushed in the daylight they rise in

a bewildered manner, fly but a short distance and drop back suddenly to the ground.

Their food consists of moths, beetles, and the various nocturnal insects caught upon the wing. I once saw, at eve, in Colorado, one of the birds repeatedly spring from the ground and catch passing moths. The birds, when mated, seem to be strongly attached to each other, the males sharing in the duties of hatching and rearing the young. The eggs, two in number, are laid upon the bare ground, usually at the roots of a bunch of grass, weeds or low bushes upon the prairies. A set collected by Prof. D. E. Lantz, on the high prairie near Manhattan, Kansas, May 25th, 1886, were sheltered by a tuft of grass; no material or lining of any kind for a nest. Eggs, 1.00x.75, 1.12x.78; pure white; in form, oval to rounded elliptical.

***Phalænoptilus nuttalli nitidus* BREWST.**

FROSTED POOR-WILL.

PLATE XXIII.

This bleached race, lately added to our list of North American Birds, has been taken in the State at Neosho Falls and Manhattan, and when better known, will, without doubt, prove to be a common summer resident.

B. —. R. —. C. —. G. —, —. U. 418a.

HABITAT. As far as known the same as that of the Poor-will. Taken in Arizona, Colorado, Kansas and Texas.

SP. CHAR. Similar to true *P. nuttalli*, but with the dark markings of the crown, back, etc., fewer and more sharply defined, on a much lighter ground, the transverse bars beneath finer, paler, and less conspicuous. This bird seems to be another example of a bleached desert race. It is very much paler than true *nuttalli*, with fewer fine dark markings, which, however, are more conspicuous than in *nuttalli*, owing to the generally lighter ground color. This on the forehead, sides of crown, rump, upper tail coverts and scapulars is pearly or ashy white, giving the parts a delicate, frosted appearance. The chin, sides of head, and a broad band around the nape are light faded brown, whereas in *nuttalli* they are many shades darker and (the chin and cheeks at least) often strongly blackish. (*Brewster.*)

This bird does not appear to differ in habits, actions or size from *P. nuttalli*, and I am impressed with the thought that it may possibly prove to be a dichromatic phase, like that of the

Screech Owl (*Megascops asio*), rather than a sub-species as now entered.

Eggs two, pure white; in form, oval to rounded elliptical. A set of eggs collected in Riley county, Kansas, June 26th, 1889, by Mr. Eben M. Blachly, and kindly loaned me, with the skin of one of the parent birds, for identification, are, in dimensions: 1.05x.79, 1.03x.78. They were laid upon the bare ground, under a bunch of grass upon the prairie, and near the edge of a corn field.

GENUS **CHORDEILES** SWAINSON.

"Bill small, the nostrils depressed; the gape with feeble, inconspicuous bristles. Wings long, narrow, and pointed; the first quill nearly or quite equal to the second. Tail rather narrow, slightly forked; plumage quite compact. Habits diurnal or crepuscular."

Chordeiles virginianus (Gmel.).

NIGHT-HAWK.

PLATE XXIII.

Summer resident; common in the eastern to the middle portion of the State; rare in the western. Arrive the first of May; begin laying the last of May; return in September; a few occasionally remain into October.

B. 114. R. 357. C. 399. G. 165, 164. U. 420.

HABITAT. Eastern North America; north to Hudson's Bay; west to edge of Great Plains; (to Pacific Coast along the northern border of the United States;) south in winter to Bahamas, Cuba, Jamaica, (breeds?) middle America, and portions of eastern South America. (*Ridgway.*)

SP. CHAR. "*Male*: Above greenish black, but with little mottling on the head and back; wing coverts varied with grayish; scapulars with yellowish rufous; a nuchal band of fine gray mottling, behind which is another coarser one of rufous spots. A white V-shaped mark on the throat; behind this a collar of pale rufous blotches, and another on the breast of grayish mottling. Under parts banded transversely with dull yellowish or reddish white and brown; wing quills quite uniformly brown; the five outer primaries with a white blotch (about half an inch long) midway between the tip and carpal joint, not extending on the outer web of the outer quills. Tail with a terminal white patch, which does not reach the outer edge of the feathers. *Female*: Without the caudal white patch, the white tail bands more mottled, the white of the throat mixed with reddish."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	9.50	23.00	7.80	4.40	.55	.26
Female	9.10	22.00	7.50	4.30	.55	.25

Iris, bill and claws blackish; legs and feet dark grayish brown.

This is one of our most common birds of the open lands and prairies. Strictly speaking, it is a diurnal bird, but more or less crepuscular in habits, retiring to rest regularly at the close of twilight. In flight they are graceful and pleasing, gliding with ease through their various evolutions and quick turns, skimming with spread tail in a buoyant, effortless manner near the ground or high in air, rising and dropping suddenly, and at times with a quick upward turn that causes a hollow, whirring sound, produced, I think, by the quick vibration of the wings upon the air. Their voice is an occasional squeak or a "Pe-up" note, and, when wounded or in the protection of their young or eggs, often startle the intruder by quickly raising their feathers and emitting through their widely-opened mouth a sharp, hissing sound; and during love making and caressing I have heard the males utter low, cooing notes.

Their food consists of small winged insects that abound in the air, especially at morn, late in the afternoon and at eve, which accounts for their activity at such times.

Eggs two, 1.22x.82; grayish white, thickly mottled all over with various tints of lilac, purple and yellowish brown; they are laid upon the bare ground, in open and exposed situations; in form, rounded elliptical.

***Chordeiles virginianus henryi* (Cass.).**

WESTERN NIGHTHAWK.

Summer resident; common in the western and middle portions of the State. Arrive about the middle of May; begin laying the last of May to first of June; return in September.

B. 115. R. 357a. C. 400. G. 166, 165. U. 420a.

HABITAT. Western United States; occasionally straggling east into Illinois (western Manitoba. *Seton*); south into Mexico.

SP. CHAR. "Similar to *C. virginianus*, but the male considerably lighter, with a greater predominance of the light mottlings, producing a more grayish

aspect; the female more rufous. Wing patch of the male larger (at least an inch long), and, like the tail patch, crossing the whole breadth of the feathers."

This pale variety does not appear to differ in the least in its habits, actions or notes from the Eastern bird, *C. virginianus*, and, from the measurements that I have made, varies but little, if any, in size. Their eggs, however, average a little larger, and are paler in color.

SUBORDER CYPSELLI. SWIFTS.

Middle toe not distinctly longer than lateral toes, its claw with edge not pectinated; gape without bristles; plumage plain and compact, the feathers with smooth surface. (*Ridgway.*)

FAMILY MICROPODIDÆ. SWIFTS.

"Bill very small, without notch, triangular, much broader than high; the culmen not one-sixth the gape. Anterior toes cleft to the base, each with three joints (in the typical species), and covered with skin or feathers; the middle claw without any serrations; the lateral toes nearly equal to the middle. Bill without bristles, but with minute feathers extending along the under margin of the nostrils. Tail feathers ten. Nostrils elongated, superior, and very close together. Plumage compact. Primaries ten, elongated, falcate."

SUBFAMILY CHÆTURINÆ. SPINE-TAILED SWIFTS.

Tarsi and toes naked; the hind toe directed backward. (*Ridgway.*)

GENUS CHÆTURA STEPHENS.

"Tail very short, scarcely more than two-fifths the wing; slightly rounded; the shafts stiffened and extending some distance beyond the feathers in a rigid spine. First primary longest. Legs covered by a naked skin, without scutella or feathers. Tarsus longer than middle toe. Lateral toes equal, nearly as long as the middle. Hind toe scarcely versatile, or quite posterior; including claw, less than the middle anterior without it. Toes slender; claws moderate. Feathers of the base of the bill not extending beyond the beginning of the nostrils."

Chætura pelagica (LINN.).

CHIMNEY SWIFT.

PLATE XXIII.

Summer resident; abundant in the eastern part of the State. Arrive the last of April; begin laying the latter part of May; return in September; a few occasionally remain into October.

B. 109. R. 351. C. 405. G. 162, 166. U. 423.

HABITAT. Eastern North America; north to Labrador, Manitoba, etc.; west to the edge of the plains; south of the United

States in winter to Cozumel Island, Jalapa, Mexico, and possibly farther.

SP. CHAR. "Tail slightly rounded. Sooty brown all over, except on the throat, which becomes considerably lighter from the breast to the bill. Above with a greenish tinge; the rump a little paler."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.05	12.30	5.10	1.90	.45	.21
Female	4.85	12.10	5.00	1.75	.45	.21

Iris dark brown; bill and claws black; legs and feet brownish black. The above are fresh measurements of a pair of adult birds, shot in the month of June. From other measurements as given, the bird should average a little larger.

These wild, restless birds are gregarious and social in their habits. I have often found them in the Indian Territory and early settlements of Kansas, occupying large hollow trees—the sycamore the favorite—and they occasionally continue to do so in settled localities, but as a rule prefer the habitations of man, and they are most abundant about our city homes, secreting themselves during the day and night, chiefly within unused chimneys, occasionally in other suitable dark retreats, coming forth at eve like the bats, but a little earlier, retiring at dark. They are occasionally to be seen flying about during the middle of bright, sunshiny days, but as a rule are rather crepuscular in their habits.

Their food consists entirely of winged insects, in search of which they never seem to flag or weary, crossing and recrossing each other's course in their circling, chattering flights, gliding along with rapid strokes of the wings or sailing with motionless wings, as best suits their purpose. On account of their extremely long wings, they cannot readily rise from a level surface, and therefore select, for a resting place, the perpendicular sides or edges of an elevation, where they can at once launch into the air. Their peculiarly-formed feet and spine-tipped tails enable them to grasp and rest at ease in such positions.

Their nests are placed in hollow trees, chimneys, etc.; a peculiar saucer-shaped semicircular structure, composed of small sticks of uniform length and size, which are strongly glued to-

gether and fastened to the wall with an adhesive saliva from the birds. Eggs usually four, .75x.50; pure white; not highly polished; in form, rather elliptical ovate.

SUBORDER TROCHILI. HUMMINGBIRDS.

Secondaries only six; bill long as head, or longer, slender, the gape not deeply cleft; plumage more or less metallic. (*Ridgway*.)

FAMILY TROCHILIDÆ. HUMMINGBIRDS.

"Least of all birds; sternum very deep; bill subulate and generally longer than head, straight, arched or upcurved. Tongue composed of two lengthened cylindrical united tubes, capable of great protrusion, and bifid at tip; nostrils basal, linear, and covered by an operculum; wings lengthened, pointed; first quill usually longest except in *Aithurus*, where it is the second; primaries ten; secondaries six; tail of ten feathers. Tarsi and feet very diminutive, claws very sharp."

GENUS TROCHILUS LINNEUS.

"Metallic gorget of throat nearly even all round. Tail forked; the feathers lanceolate, acute, becoming gradually narrower from the central to the exterior. Inner six primaries abruptly and considerably smaller than the outer four, with the inner web notched at the end."

SUBGENUS TROCHILUS.

Exposed culmen less than half as long as wing, the bill straight. Middle tail feathers narrower near end than at base. Exposed culmen .60 or more; outer tail feathers without white tips in adult males; outer tail feathers not decidedly shorter than middle pair, and not conspicuously narrower than the next; adult males with six innermost quills abruptly much smaller and narrower than the rest, the top of head greenish like back, or dusky, the tail feathers (except middle pair) pointed. (*Ridgway*.)

Trochilus colubris LINN.

RUBY-THROATED HUMMINGBIRD.

PLATE XXIII.

Summer resident; common in the eastern portion of the State. Arrive the last of April to first of May; begin laying the last of May; the bulk leave in September; a few remain into October.

B. 101. R. 335. C. 409. G. 161, 167. U. 428.

HABITAT. Eastern North America; west to the high central plains; north into the fur countries, and south in winter to Cuba, and through eastern Mexico to Veragua.

SP. CHAR. "Tail in the male deeply forked; the feathers all narrow lanceolate-acute. In the female, slightly rounded and emarginate; the feathers broader, though pointed. *Male*: Uniform metallic green above; a ruby red gorget (blackish near the bill), with no conspicuous ruff; a white collar on the jugulum; sides of body greenish; tail feathers uniformly brownish violet. *Female*: Without the red on the throat; the tail rounded and emarginate, the inner feathers shorter than the outer; the tail feathers banded with black, and the outer tipped with white; no rufous or cinnamon on the tail in either sex. *Young*: Males are like the females; the throat usually spotted, sometimes with red; the tail is, in shape, more like that of the old male."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	3.55	4.15	1.55	1.10	.15	.65
Female . . .	3.50	4.25	1.60	1.10	.15	.65

Iris dark brown; bill, legs, feet and claws black.

The above are fresh measurements of an adult pair. From dimensions as given by others, they probably average a little larger.

These hardy little beauties begin to arrive from the south as soon as the cherry and apple trees are in blossom; the males several days in advance; brave, pugnacious little fellows, that, during the mating season, will fight their rivals for their lady loves, till death; and in defense of their homes boldly attack the larger birds, and often dart at and try to frighten man away. They breed from the Gulf coast north to at least the fifty-seventh parallel. The following beautiful description of their flights and manner of feeding is taken from "Our Birds in their Haunts," by Mr. Langille:

"There are many birds the flight of which is so rapid that the strokes of their wings cannot be counted, but here is a species with such nerve of wing that its wing strokes cannot be seen. 'A hazy semicircle of indistinctness on each side of the bird is all that is perceptible.' Poised in the air, his body nearly perpendicular, he seems to hang in front of the flowers which he probes so hurriedly, one after the other, with his long, slender bill. That long, tubular, fork-shaped tongue may be sucking up the nectar from those rather small cylindrical blossoms, or it may be capturing tiny insects housed away there. Much more like a large sphynx moth, hovering and humming over the flowers in the dusky twilight, than like a bird, appears

this delicate fairy-like beauty. How the bright green of the body gleams and glistens in the sunlight; while the ruby colored throat, changing with the angle of light as the bird moves, is like a bit of black velvet above the white under parts, or it glows and shimmers like a flame. Each imperceptible stroke of those tiny wings conforms to the mechanical laws of flight in all their subtle complications, with an ease and gracefulness that seems spiritual. Who can fail to note that fine adjustment of the organs of flight to aerial elasticity and gravitation, by which that astonishing bit of nervous energy can rise and fall almost on the perpendicular, dart from side to side, as if by magic, or, assuming the horizontal position, pass out of sight like a shooting star? Is it not impossible to conceive of all this being done by that rational calculation which enables the rower to row, or the sailor to sail his boat?"

Their deep, cup-shaped nests are usually built on small, horizontal limbs of trees, six to twelve feet from the ground; a delicate, beautiful structure, composed of a cottony substance, and soft, silky fibers from plants, the outside dotted over with lichens. Eggs two (varying in size), .48x.33; pure white; in form, rather elliptical.

ORDER PASSERES.

PERCHING BIRDS.

"Hallux invariably present, completely incumbent, separately movable by specialization of the *flexor hallucis longus*, with enlarged base and its claw larger than that of the middle digit. Neither second nor fourth toe versatile; joints of toes always 2, 3, 4, 5, from first to fourth. Wing coverts comparatively short and few; with the exception of the least coverts from the *plica alaris*, arranged in only two series, the greater of which does not reach beyond the middle of the secondary remiges. Rectrices twelve (with rare anomalous exceptions). Musical apparatus present in greater or less development and complexity. Palate ægithognathous. Sternum of one particular mould, single notched. Carotid single (sinistra). Nature highly altricial and ptilopædic."

SUBORDER CLAMATORES. SONGLESS PERCHING BIRDS.

"Sides of the tarsus covered with divided plates or scales variously arranged, its hinder edge blunt. Musical apparatus weak and imperfect, a few or incompletely distinguished syringeal muscles (as far as known). Primaries ten (with rare exceptions), the first usually equaling or exceeding the rest."

FAMILY **TYRANNIDÆ**. TYRANT FLYCATCHERS.

"Primaries ten. Bill in typical forms broad, triangular, much depressed, abruptly decurved and notched at tip, with long bristles along gape. Tarsi with scutella extending round the outer face of tarsus from the front to back; sometimes divide on the outer side. Bill with culmen nearly as long as the head, or shorter; straight to near the tip, then suddenly bent down into a conspicuous hook, with a notch behind it; tip of lower jaw also notched. Commissure straight to near the notch; gonys slightly convex. Nostrils oval or rounded in the anterior extremity of the nasal groove, and more or less concealed by long bristles, which extend from the posterior angle of the jaws along the base of the bill, becoming smaller, but reaching nearly to the median line of the forehead. These bristles with lateral branches at the base. Similar bristles are mixed in the loreal feathers and margin the chin. Tarsi short, generally less than middle toe, completely enveloped by a series of large scales, which meet near the posterior edge of the inner side, and are separated either by naked skin or by a row of small scales. Sometimes a second series of rather large plates is seen on the posterior face of the tarsus, these, however, usually on the upper extremity only. Basal joint of middle toe united almost throughout to that of the outer toe, but more than half free on the inner side; outer lateral toe rather the longer. Wings and tail variable; first quills always more than three-fourths the second. The outer primaries sometimes attenuated near the tip."*

GENUS **MILVULUS** SWAINSON.

"Bill shorter than the head, and nearly equal to the tarsus. Tail nearly twice as long as the wing, excessively forked; the middle feathers scarcely half the lateral. First primary abruptly attenuated at the end, where it is very narrow and linear. Head with a concealed crest of red."

Milvulus forficatus (GMEL.).

SCISSOR-TAILED FLYCATCHER.

PLATE XXIII.

Summer resident; quite common in the southern parts of the State. Arrive the first to middle of May; begin laying the last of May; leave in September.

B. 123. R. 301. C. 367. G. 149, 168. U. 443.

HABITAT. Eastern Mexico and southwestern prairie districts of United States; north to Indian Territory, southern Kansas

* Birds of this fly-catching family occasionally eat berries.

and southwestern Missouri; accidental at Key West, Florida, at Norfolk, Virginia, New Jersey, New England, Manitoba, and even at York Factory, Hudson's Bay Territory; south to Costa Rica. (*Ridgway*.)

SP. CHAR. "Wing with the outer primary only abruptly attenuated and narrowly linear (for about .85 of an inch); the second but slightly emarginate; second quill longest; first and third equal. Tail very deeply forked, the lateral feathers twice as long as the body, all narrow and linear or subspatulate. Top and sides of head very pale ash; the back a little darker and faintly tinged with light brick red; under parts nearly pure white, tinged toward the tail with light vermillion, rather more rose on the under wing coverts; a patch on the side of the breast and along the forearm dark vermillion red. Tail feathers rosy white, tipped at the end for two or three inches with black. Rump dark brown, turning to black on the coverts. Wings very dark brown; the coverts and quills, excepting the primaries (and including the outer of these), edged with whitish. Crown with a concealed patch of white, having some orange red in the center."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	14.25	15.50	5.00	9.25	.70	.70
Female . . .	11.50	14.20	4.35	6.50	.68	.68

Iris, legs and feet dark brown; bill and claws black.

This very singular and beautiful species prefers for its home prairie lands that are dotted with scattering or lone, shrubby trees. They are quite common from latitude 38° southward through the Indian Territory, Texas and eastern Mexico, and I found them wintering in large numbers in the vicinity of Granada, Nicaragua, and along the west side of the lake south into Costa Rica; and March 2d, 1885, I shot a straggling male at Cape Sable, Florida. It is one of our most graceful and attractive birds of the air, skimming over the prairies with inimitable grace, closing and expanding its long, forked tail, and showing off in the changing lights to the best advantage its vermillion markings in contrast with its ashy hue, perching often in its course upon a bush or tall weed, and at times rising from the same to quite a height, and then suddenly dropping in an almost perpendicular manner. A courageous and rather quarrelsome bird, that not only attacks the birds of prey but drives all others away from its selected home, uttering in its chase a sharp, harsh, scolding, "Tish, tish, tish" note. It is an expert fly catcher, and feeds chiefly upon the various kinds of winged insects.

Their nests are placed on the horizontal branches of scrubby trees on and skirting the edges of the prairies, six to twelve feet from the ground; a rather flat, loosely-constructed nest, composed of sticks, flowering stems of weeds, and grasses. Eggs three to five, .85 x .68; white, spotted and blotched with dark red or reddish brown, and a few purple stains, chiefly about larger end; in form, rather rounded ovate.

GENUS **TYRANNUS** CUVIER.

"Tail nearly even or moderately forked; rather shorter than the wings; the feathers broad and widening somewhat at the ends. Wings long and pointed; the outer primaries rather abruptly attenuated near the end, the attenuated portion not linear, however. Head with a concealed patch of red on the crown."

Tyrannus tyrannus (LINN.).

KINGBIRD.

PLATE XXIII.

Summer resident; abundant. Arrive the last of April; begin laying about the middle of May; return in September.

B. 124. R. 304. C. 368. G. 150, 169. U. 444.

HABITAT. Temperate North America, chiefly east of the Rocky Mountains; very rare on the Pacific coast; south in winter into northern South America.

SP. CHAR. "Two, sometimes three, outer primaries abruptly attenuated at the end. Second quill longest; third little shorter; first rather longer than fourth, or nearly equal. Tail slightly rounded. Above dark bluish ash. The top and sides of the head to beneath the eye a bluish black. A concealed crest on the crown, vermilion in the center, white behind, and before partly mixed with orange. Lower parts pure white, tinged with pale bluish ash on the sides of the throat and across the breast; sides of the breast and under the wings similar to but rather lighter than the back. Axillars pale grayish brown, tipped with lighter. The wings dark brown, darkest toward the ends of the quills; the greater coverts and quills edged with white, most on the tertials; the lesser coverts edged with paler. Upper tail coverts and upper surface of the tail glossy black, the latter very dark brown beneath; all the feathers tipped, and the exterior margined externally, with white, forming a conspicuous terminal band about .25 of an inch broad."

The birds vary somewhat in size; the females averaging, from my measurements, fully as large as the males.

<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
8.50	14.50	4.50	3.50	.70	.70

Iris dark brown; bill and claws black; legs and feet grayish to brownish black.

This common and well known species are rightly entitled to the name they bear, on account of their brave, audacious attacks upon the birds of prey and others intruding upon their breeding grounds. This combative spirit, however, closes with the season, and their shrill, twittering notes are seldom heard after the young are capable of providing for themselves. The males arrive about a week in advance, and on the arrival of the females, many a hard battle is fought for the choice. Their courtships are short, and, when once mated, they are true and devoted, and zealous guardians of their homes. The following truthful description is from "Birds of New England," by Samuels:

"During the mating and breeding season, the pugnacity and courage of the Kingbird are proverbial. If any bird approach the neighborhood of his nest, he immediately attacks it; and, whether Crow (his particular dislike), Hawk or Eagle, the intruder is obliged to flee, so fierce an onslaught does this little warrior make on him. As soon as the cry of a Crow is heard, he is all activity; he flies from the tree where he is perching to reconnoiter, uttering his shrill twitter, and vibrating his wings in short, quick, nervous strokes; as soon as the Crow appears, the Kingbird pursues it, his flight being now very swift and powerful. As soon as he nears his foe, he flies above him, and darting down on his back and head, attacks him with such vigor, that the Crow dives and dodges to avoid him. He repeats his attacks, and follows his enemy, sometimes to the distance of a mile or more; then, returning to his mate, he perches on the tree by her nest, and twitters a volley of courageous songs." [Song is not the word, for its notes are not musical, but rather a harsh, exulting twitter.]

"The food of the Kingbird consists mostly of insects,* which he captures usually while on the wing. It seems a provision of nature, that all the flycatchers shall only take those insects that have taken flight from the foliage of trees and shrubs, at the

* Berries also help to make up their bill of fare, the pokeberry being the favorite.

same time making the warblers and other birds capture those which remain concealed in such places. The Kingbird, in seizing a flying insect, flies in a sort of half flitting hover, and seizes it with a sharp snap of the bill. Sometimes he descends from his perch, and captures a grasshopper that has just taken a short flight, and occasionally seizes one that is crawling up some tall stalk of grass. Those farmers who keep bees dislike this bird, because of his bad habit of eating as many of those insects as show themselves in the neighborhood of his nest; but they should remember that the general interests of agriculture are greater than those of a hive of bees."

Their nests are usually placed on branches of trees, in open and exposed situations, six to twenty feet from the ground; in treeless localities, in almost any available place; a rather bulky, flat structure, composed of stems of weeds and grasses, and lined with hair-like rootlets, and often, woven in with the same, bits of rags and twine. Eggs three to six, usually four, .90x.68. They vary greatly in size, and measurements as high as 1.05x.75 have been given. (Ridgway says .95x.69.) A set of four eggs, taken at Neosho Falls, only measure: .78x.64, .79x.65, .80x.66, .82x.67; white to creamy white, thinly spotted with purple to dark reddish brown; in form, ovate.

***Tyrannus verticalis* SAY.**

ARKANSAS KINGBIRD.

PLATE XXIII.

Summer resident; common in the middle and western parts of the State. Arrive about the first of May; begin laying the last of May; return in September.

B. 126. R. 306. C. 370. G. 151, 170. U. 447.

HABITAT. Western United States; east to Missouri and western Minnesota; occasionally straggling far eastward; south in winter to Guatemala.

SP. CHAR. "The four exterior quills attenuated very gently at the end, the first most so; third and fourth quills longest; second and fifth successively a little shorter. Tail slightly forked; bill shorter than head. Crown, sides of head above the eyes, nape and sides of neck pale lead color or ash gray; a concealed crest on the crown, vermillion in the center and yellowish before and be-

hind. Hindneck and back ash gray, strongly tinged with light olivaceous green, the gray turning to brown on the rump; upper tail coverts nearly black, lower dusky; chin and part of ear coverts dull white; throat and upper part of breast similar to the head, but lighter, and but slightly contrasted with the chin; rest of lower parts, with the under wing coverts and axillars, yellow, deepening to gamboge on the belly, tinged with olivaceous on the breast. Wing brown, the coverts with indistinct ashy margins; secondaries and tertials edged with whitish; inner webs of primaries whitish towards the base. Tail nearly black above, and glossy; duller brownish beneath; without olivaceous edgings. Exterior feather, with the outer web and the shaft, yellowish white; inner edge of latter brown. Tips of remaining feathers paler. Bill and feet dark brown. *Female*: Rather smaller and colors less bright."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	9.00	16.00	5.10	3.75	.70	.65
Female . . .	8.75	15.20	4.70	3.60	.70	.65

Iris dark brown; bill, legs, feet and claws blackish.

These birds are almost a counterpart of the Kingbird, possessing a harsher voice, a stronger flight, and, if possible, a more combative, pugnacious spirit. Their nesting places and eggs are essentially the same. A set of four eggs, taken June 7th, 1880, at San Diego, California, from a nest in the top of a gate post, measure: .89 x .71, .90 x .72, .91 x .72, .92 x .71.

GENUS **MYIARCHUS** CABANIS.

"Tarsus equal to or not longer than middle toe, which is decidedly longer than hinder one. Bill wider at base than half the culmen. Tail broad, long, even or slightly rounded, about equal to the wings, which scarcely reach the middle of the tail; the first primary shorter than the sixth. Head with elongated lanceolate distinct feathers. Above brownish olive, throat ashy, belly yellow. Tail and wing feathers varied with rufous."

Myiarchus crinitus (LINN.).

CRESTED FLYCATCHER.

PLATE XXIII.

Summer resident; abundant in the eastern part of the State. Arrive the latter part of April to first of May; begin laying about the middle of May; return in September.

B. 130. R. 312. C. 373. G. 152, 171. U. 452.

HABITAT. Eastern North America; north to New Brunswick and Manitoba; east to the edge of the Great Plains; south through eastern Mexico to Costa Rica.

SP. CHAR. "Head with a depressed crest. Third quill longest; fourth and second successively but little shorter; first a little longer than seventh, much shorter than sixth. Tail decidedly rounded or even graduated; three lateral feathers about .25 of an inch shorter. Upper parts dull greenish olive, with the feathers of the crown and to some extent of the back showing their brown centers; upper tail coverts turning to pale rusty brown. Small feathers at the base of the bill, ceres, side of the head as high as the upper eyelid, sides of the neck, throat and fore part of the breast, bluish ashy; the rest of the lower parts, including axillars and lower wing coverts, bright sulphur yellow. A pale ring round the eye. Sides of the breast and body tinged with olivaceous; the wings brown; the first and second rows of coverts, with the secondary and tertial quills, margined externally with dull white, or on the latter slightly tinged with olivaceous yellow. Primaries margined externally for more than half their length from the base with ferruginous; great portion of the inner webs of the quills very pale ferruginous. The two middle tail feathers light brown, shafts paler; the rest have the outer web and a narrow line on the inner sides of the shaft brown, pale olivaceous on the outer edge; the remainder ferruginous to the very tip. Outer web of the exterior feather dull brownish yellow. Feet black. Bill dark brown above and at the tip below; paler towards the base."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	9.00	13.50	4.00	4.10	.80	.75
Female . . .	8.50	12.50	3.75	3.60	.80	.75

These birds seem to be as much at home among the scattering trees of the upland prairies as within the heavily timbered bottom lands. They are rather retiring in their habits, but bold and courageous during the breeding season, charging upon an intruder with raised crest, snapping bill and a rapid, scolding "Twip." They have also a loud and rather queer whistling call note, not—to my ear—a harsh squeak note, as stated by some writers. They fight fiercely for a mate, and they have a habit that I have not noticed in other birds, of plucking, if possible, the tail feathers from a rival, in order to disfigure him so that he will not be looked upon with favor by the opposite sex; and when lucky enough to pull a feather, it is amusing to see them fuss over it, picking, pulling, in fact fighting it, forgetting for the time the owner, in their exultation over the capture.

In flight they are swift and strong, and sweep down from a perch with unerring aim upon the unlucky insects that wing themselves in sight, and, if a large one, beat it lifeless before swallowing. They also occasionally feed upon small berries.

Their nests are usually placed in natural cavities in trees,

occasionally in a Martin house, or other dark recess. In the month of June, 1887, a pair built a nest in one of the cannons, on the State-House grounds, at Topeka; one egg was laid, but unfortunately at that time the cannon was brought into use for drill, and the nest destroyed. Eggs four to six, rarely over four; vary in size. A set of four eggs, taken June 7th, 1879, at Shelter Island, New York, from a hole in an apple tree, measure: .80x.65, .82x.65, .83x.66, .84x.67 (Ridgway gives the average to be .88x.66); a beautiful egg; buff white, thickly marked with wavy longitudinal lines, dots and splashes of lilac, to dark reddish brown; in form, oval to ovate.

GENUS **SAYORNIS** BONAPARTE.

"Head with a blended depressed moderate crest. Tarsus decidedly longer than middle toe, which is scarcely longer than the hind toe. Bill rather narrow; width at base about half the culmen. Tail broad, long, slightly forked; equal to the wings, which are moderately pointed, and reach to the middle of the tail. First primary shorter than the sixth."

Sayornis phœbe (LATH.).

PHŒBE.

PLATE XXIII.

Summer resident; common in the eastern portion of the State. Arrive in March; begin laying by the middle of April; return in October.

B. 135. R. 315. C. 379. G. 153, 172. U. 456.

HABITAT. Eastern North America; north to New Brunswick and Manitoba; west to eastern Colorado and western Texas; south through eastern Mexico to Cuba; winters from the Gulf coast southward.

SP. CHAR. "Sides of breast and upper parts dull olive brown, fading slightly toward the tail. Top and sides of head dark brown. A few dull white feathers on the eyelids. Lower parts dull yellowish white, mixed with brown on the chin, and in some individuals across the breast. Quills brown, the outer primaries, secondaries and tertials edged with dull white. In some individuals the greater coverts faintly edged with dull white. Tail brown; outer edge of lateral feather dull white; outer edge of the rest like the back. Tibia brown. Bill and feet black. Bill slender, edges nearly straight. Tail rather broad and slightly forked. Third quill longest; second and fourth nearly equal; the first shorter than sixth."

	Length.	Stretch of wing	Wing.	Tail.	Tarsus.	Bill.
Male	6.70	10.75	3.25	3.20	.66	.50
Female . . .	6.50	10.52	3.10	3.00	.66	.50

Iris brown; bill, legs, feet and claws black.

These familiar birds are among the first arrivals to assure us of the return of spring. Their inoffensive, cheerful habits insure them a hearty welcome. Their attachment to a selected locality is very strong, and, when not greatly disturbed, nest for years in the same place. I have occasionally found them nesting under porches, sheds, etc., on high prairie lands, but as a rule they prefer to make their home near the water's edge, beside a bridge or steep, rocky cliff, as these afford natural nesting places and a greater abundance of insect life, of which their food almost wholly consists, and where, at all hours of the day, they will be found perched upon a limb or stub, darting here and there to capture with a click of their bills the insects of their choice; and when at rest often utter, with a raised crest and a jerk of the tail, their plaintive call note, "Phœbe," or at times "Pe-weet." They also have, during the mating season, a low, twittering song. Their flights are a succession of light fluttering motions and frequent sailings.

Their nests are placed under bridges, overhanging rocks, roots, and suitable places in dwellings and outhouses. They are composed of layers of mud, moss, grasses or other miscellaneous material at hand, and warmly lined with fine grasses, rootlets or hairs. Eggs four to six, .75 x .56; pure white; occasionally sets will be found with dots of reddish brown around the larger end; in form, oval to ovate.

Sayornis saya (BONAP.).

SAY'S PHŒBE.

PLATE XXIII.

Summer resident in the western portion of the State; common; occasionally east to the middle. Arrive the middle of March to first of April; begin laying the middle to last of April; return in October.

B. 136. R. 316. C. 377. G. 154, 173. U. 457.

HABITAT. Western United States; north to the Saskatchewan; east to Dakota (straggling occasionally eastward); south through middle Kansas into Mexico to Jalapa.

SP. CHAR. "Above and on the sides of the head, neck and breast, grayish brown, darker on the crown; region above the eye dusky. The chin, throat and upper part of the breast similar to the back, but rather lighter, and tinged with the colors of the rest of the lower parts, which are pale cinnamon. Under wing coverts pale rusty white. The wings of a rather deeper tint than the back, with the exterior veins and tips of the quills darker. Edges of the greater and secondary coverts, of the outer vein of the outer primary, and of the secondaries and tertials, dull white. The upper tail coverts and tail nearly black. Edge of outer vein of exterior tail feather white. Second, third and fourth quills nearly equal; fifth nearly equal to sixth; sixth much shorter than the first. Tail broad, emarginate. Tarsi with a posterior row of scales."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.00	13.25	4.25	3.70	.90	.60
Female . . .	7.50	12.50	4.00	3.40	.90	.60

Iris dark brown; bill, legs, feet and claws black.

These hardy, bleached birds of the plains do not appear to differ in actions from *S. phæbe*; their notes are, however, somewhat different, with more of a tremulous, wailing sound; and the layers of mud in their nests are thinner, often on the dry, sterile plains, wholly without the same. They winter from Texas, New Mexico and California southward. They are among the first arrivals and last to leave their summer homes.

A set of five eggs, taken May 15th, 1882, at Santa Fe, New Mexico, from a nest on the wall of an adobe house, measure: .69x.50, .71x.55, .72x.55, .72x.56, .74x.54; chalky white; in form, ovate.

GENUS **CONTOPUS** CABANIS.

"Tarsus very short, but stout; less than the middle toe and scarcely longer than the hinder; considerably less than the culmen. Bill quite broad at the base; wider than half the culmen. Tail moderately forked. Wings very long and much pointed, reaching beyond the middle of the tail; the first primary about equal to the fourth. All the primaries slender and rather acute, but not attenuated. Head moderately crested. Color olive above, pale yellowish beneath, with a darker patch on the sides of the breast. Under tail coverts streaked in most species. A tuft of cottony white feathers on each side of the rump (concealed in most species)."

SUBGENUS **NUTTALLORNIS** RIDGW.

Tarsus shorter than middle toe with claw. Primaries exceeding secondaries by two and half times the length of the tarsus; wing exceeding tail by about half the length of the latter; first quill much longer than the fourth, often longer than third; a very conspicuous white cottony patch on each side of rump;

median lower parts white, or very pale yellowish (scarcely interrupted on the breast); the lateral portions deep grayish brown, or brownish gray, in strong contrast. (*Ridgway*.)

Contopus borealis (SWAINS.).

OLIVE-SIDED FLYCATCHER.

PLATE XXIII.

Summer resident; rare; not common during migration. Arrive the last of April to middle of May; begin laying the last of May; return in September.

B. 137. R. 318. C. 380. G. 155. 174. U. 459.

HABITAT. The whole of northern North America; south in winter through the mountain regions to Costa Rica and Veragua.

SP. CHAR. "Wings long, much pointed; the second quill longest; the first longer than the third. Tail deeply forked. Tarsi short. The upper parts ashy brown, showing darker brown centers of the feathers (this is eminently the case on the top of the head); the sides of the head and neck, of the breast and body, resembling the back, but with the edges of the feathers tinged with gray, leaving a darker central streak. The chin, throat, narrow line down the middle of the breast and body, abdomen and lower tail coverts white, or sometimes with a faint tinge of yellow. The lower tail coverts somewhat streaked with brown in the center. On each side of the rump, generally concealed by the wings, is an elongated bunch of white silky feathers. The wings and tail very dark brown, the former with the edges of the secondaries and tertials edged with dull white. The lower wing coverts and axillars grayish brown. The tips of the primaries and tail feathers rather paler. The young of the year similar, but the color duller; edges of wing feathers dull rusty instead of grayish white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.50	13.20	4.30	3.00	.65	.60
Female . . .	7.25	12.25	4.00	2.85	.65	.60

Iris dark brown; bill black, with base of under mandible brownish yellow; legs, feet and claws black.

These birds appear to prefer for their homes the high lands or mountain regions, among the evergreen trees; the cedar is a favorite. I have not found them abundant or very common anywhere. May 27th, 1883, I found a pair nesting near the top of a large, solitary cottonwood tree, on the south fork of the Solomon River, near Wallace, Kansas.

They are rather bold, quarrelsome and tyrannical, zealously guarding any chosen locality, where they will be found perched upon the tops of the tallest trees, from which they swoop down



PLATE XXIV.

1. WOOD PEWEE; Male. 2. Female. 3. WESTERN WOOD PEWEE; Male. 4. Female. 5. TRAILL'S FLYCATCHER; Male. 6. Female. 7. LEAST FLYCATCHER; Male. 8. Female. 9. PRAIRIE HORNED LARK; Male. 10. Female. 11. DESERT HORNED LARK; Male. 12. Female. 13. AMERICAN MAGPIE; Male. 14. Female. 15. BLUE JAY; Male. 16. Female. 17. MEXICAN RAVEN; Male. 18. WHITE-NECKED RAVEN; Male.

upon the passing insects, and often repeat their plaintive "Pu-pu" or "Pu-pip," the males occasionally uttering a loud, whistling call note.

Their nests are placed in the upper branches of trees; a flat, loose structure, composed of twigs, strips of bark, rootlets, weeds, etc., and lined with old grasses, fragments of moss and lichen. Eggs three to five, (seldom five, usually three or four,) .82 x .62; deep cream or buff white, marked around the larger end with purple gray and dull yellowish to reddish brown; in form, ovate.

Contopus virens (LINN.).

WOOD PEWEE.

PLATE XXIV.

Summer resident; common in the eastern part of the State, rare in the western. Arrive the last of April to middle of May; begin laying the last of May; return in September; occasionally linger into October.

B. 139. R. 320. C. 382. G. 156, 175. U. 461.

HABITAT. Eastern North America; north to New Brunswick and Manitoba; west to the edge of the Great Plains; south in winter through eastern Mexico to Costa Rica.

SP. CHAR. "The second quill longest; the third a little shorter; the first shorter than the fourth; the latter nearly .40 longer than the fifth. The primaries more than an inch longer than the secondaries. The upper parts, sides of the head, neck and breast dark olivaceous brown, the latter rather paler, the head darker. A narrow white ring round the eye. The lower parts pale yellowish, deepest on the abdomen; across the breast tinged with ash. This pale ash sometimes occupies the whole of the breast, and even occasionally extends up to the chin. It is also sometimes glossed with olivaceous. The wings and tail dark brown; generally deeper than in *S. phæbe*. Two narrow bands across the wing; the outer edge of first primary, and of the secondaries and tertials, dull white. The edges of the tail feathers like the back; the outer one scarcely lighter."

	Length.	Stretch of wings.	Wing.	Tail.	Tarsus.	Bill.
Male	6.40	10.20	3.35	2.80	.50	.50
Female	6.00	9.75	3.15	2.55	.50	.50

Iris brown; bill, upper black, lower yellow, with tip brown; legs, feet and claws black.

These rather solitary birds inhabit the thick woods and groves, preferring the bottom lands along the streams. They closely

resemble the Phœbe, but differ much in habits, preferring the gloomy forests to the habitations of man.

Their food consists chiefly of beetles and flies, which they are very expert in catching; darting from their perch, they capture here and there several insects before returning, and accompany each capture with a snap of their bill. They are the most active during the early part of the day and late at eve. A rather restless bird, that, on its perch, often slightly raises its feathers with a quivering motion of the wings and tail, uttering its oft-repeated, sad, though pleasing, "Pe-r-wee." They are quite common in suitable localities throughout their range, breeding from near the Gulf coast northward, and wintering almost wholly south of the United States.

Their nests are saddled on the lower branches of trees, from eight to twenty-five feet from the ground.

They are composed of fine stringlets, lint-like fibers, rootlets and bits of cobwebs, the outside coated over with mosses and lichens glued to the material with saliva—a beautiful cup-shaped nest. Eggs three to five, .73x.52; cream white, spotted and blotched with lilac purple to dark reddish brown, chiefly at and running together around the larger end; in form, ovate.

Contopus richardsonii (SWAINS.).

WESTERN WOOD PEWEE.

PLATE XXIV.

A summer resident in the western part of the State; rare. Arrive about the middle of May; begin laying the last of May to first of June; return in September.

B. 138. R. 321. C. 383. G. 157, 176. U. 462.

HABITAT. Western North America; north to British Columbia (Manitoba. *Seton*); east to western Nebraska and Texas; south in winter through Mexico to Costa Rica.

SP. CHAR. "General appearance of *C. virens*. Bill broad. Wings very long and much pointed, considerably exceeding the tail; second quill longest; third a little shorter; first shorter than fourth, and about midway between distance from second to fifth (.60 of an inch). Primaries 1.20 inches longer than secondaries. Tail moderately forked. Above, dark olive brown (the head darker); the entire breast and sides of head, neck and body of a paler shade of the same, tinging strongly also the dull whitish throat and chin. Abdomen and under

tail coverts dirty pale yellowish. Quills and tail dark blackish brown; the secondaries narrowly, the tertials more broadly, edged with whitish. Two quite distinct bands of brownish white across the wings."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.20	10.50	3.50	2.70	.50	.50
Female	6.00	10.00	3.25	2.50	.50	.50

Iris brown; bill, upper black, under brownish yellow, the tip dark brown; legs, feet and claws black.

This Western form does not differ essentially in its actions or habits from the Wood Pewee. Its note is, however, quite different, more emphatic, "Pe-ah," and its nest a little deeper, and without the external lichens, but has the same style of structure. It is composed chiefly of old, dead grasses, which are closely woven in and together with fine lints, thread-like fibers and fine, wiry stemlets from grass tops, and occasionally upon the outside a few old, dead leaves. Their eggs have the same form and markings, but average a little paler in color. A set of three, taken June 26th, 1876, at Santa Cruz, California, measure: .71 x .55, .72 x .54, .74 x .54.

GENUS **EMPIDONAX** CABANIS.

"Tarsus lengthened, considerably longer than bill and exceeding the middle toe, which is decidedly longer than the hind toe. Bill variable. Tail very slightly forked, even or rounded; a little shorter only than the wings, which are considerably rounded; the first primary much shorter than the fourth. Head moderately crested. Color, olivaceous above, yellowish beneath; throat generally gray."

Empidonax acadicus (GMEL.).

ACADIAN FLYCATCHER.

Summer resident in the eastern to middle portion of the State; not uncommon in the eastern part. Arrive the first to the twentieth of May; begin laying early in June; return in September.

B. 143. R. 324. C. 384. G. 158, 177. U. 465.

HABITAT. Eastern United States (western Manitoba. *Seton*); west into Nebraska and middle Texas; south in winter through eastern Mexico into northern South America.

SP. CHAR. "The second and third quills are longest, and about equal; the fourth a little shorter; the first about equal to fifth, and about .35 less than the longest. Tail even; the upper parts, with sides of head and neck, olive green;

the crown very little if any darker. A yellowish white ring round the eye. The sides of the body under the wings like the back, but fainter olive; a tinge of the same across the breast; the chin, throat and middle of the belly white; the abdomen, lower tail and wing coverts, and sides of the body not covered by the wings, pale greenish yellow. Edges of the first primary, secondaries and tertials margined with dull yellowish white, most broadly on the latter. Two transverse bands of pale yellowish (sometimes with an ochery tinge) across the wings, formed by the tips of the secondary and primary coverts, succeeded by a brown one. Tail light brown, margined externally like the back; upper mandible light brown above, pale yellow beneath; in autumn the lower parts are more yellow. Length, 5.65; wing, 3.00; tail, 2.75. *Young*: Whole upper surface with indistinct transverse bars of pale ochraceous; wing markings light ochraceous."

I have mislaid my list of fresh measurements of this species. Ridgway says: "*Male*: Wing, 2.75x3.10 (2.83); tail, 2.30x2.70 (2.49); culmen, .62x.69, (.66); bill from nostril, .32x.39 (.35); width at base, .28x.30 (.30); tarsus, .59x.67 (.62). *Female*: Wing, 2.55x2.70 (2.65); tail, 2.25x2.35 (2.32).

These birds of the woodlands are far from plenty in their extreme eastern range, but very common westward, especially in the Mississippi valley, breeding from the Gulf coast northward. They frequent the deep, shady groves and forests, preferring the low, moist lands. A rather shy bird, and their presence would seldom be known were it not for their quick, sharp, emphatic, "Whut-er-see," that breaks with startling effect the stillness of their gloomy surroundings. They are to be looked for in the low branches of trees, from which they dart in the pursuit of insects, or to chase a rival or fly-catching bird—for they are zealous defenders of their foraging grounds, as well as their nesting places. In autumn berries help to make up their bill of fare.

Their nests are placed in horizontal forks at the extremity of small limbs; they are never saddled, or placed on the top of a limb, but securely fastened to the branches, partially resting and partially suspended between the forks; a rather thin, loose structure, composed of small, wiry stems of grasses, rootlets, fibrous strippings from plants, intermingled with tree catkins. They usually range from six to twelve feet from the ground. Eggs two to four (usually three), .75x.54; cream white, very sparingly speckled and spotted (chiefly about the larger end) with reddish brown; in form, ovate.

Empidonax pusillus traillii (AUD.).

TRAILL'S FLYCATCHER.

PLATE XXIV.

Summer resident; not uncommon. Arrive the last of April to middle of May; begin laying early in June; return early in September.

B. 140. R. 325*a*. C. 385. G. 159. 178. U. 466*a*.

HABITAT. Eastern North America, to the plains; north to Nova Scotia and Manitoba; south in winter to northern South America.

SP. CHAR. "Third quill longest; second scarcely shorter than the fourth; first shorter than fifth, about .35 shorter than the longest. Primaries about .75 of an inch longer than secondaries. Tail even. Upper parts dark olive green; lighter under the wings, and duller and more tinged with ash on nape and sides of the neck. Center of the crown feathers brown. A pale yellowish white ring (in some specimens altogether white) round the eye. Loral feathers mixed with white. Chin and throat white; the breast and sides of throat light ash tinged with olive (its intensity varying in individuals), the former sometimes faintly tinged with olive. Sides of the breast much like the back. Middle of the belly nearly white; sides of the belly, abdomen and the lower tail coverts sulphur yellow; the quills and tail feathers dark brown, as dark (if not more so) as these parts in *C. virens*. Two olivaceous yellow white bands on the wing, formed by the tips of the first and second coverts, succeeded by a brown one; the edge of the first primary and of secondaries and tertials a little lighter shade of the same. The outer edge of the tail feathers like the back; that of the lateral one rather lighter. *Young*: With the wing bands ochraceous instead of grayish olive."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.75	9.00	2.75	2.50	.65	.45
Female . . .	5.60	8.60	2.60	2.35	.65	.45

Iris brown; bill, upper black, under dull brownish yellow, shading into darker brown at tip; legs, feet and claws black.

These birds are quite common and breed throughout their summer range. They frequent the groves and woods skirting streams and swampy lands. A rather noisy bird, that at short intervals utters its loud call note, "Ke-wick." Its ordinary note is a sharp "Pip," and, as it flits about from bush to bush, often repeats the same in a twittering manner. Their food habits and actions are essentially the same as those of the Acadian; but their nests are constructed in a very different manner, the same being placed in the upright forks of a bush or sapling,

usually from four to ten feet from the ground. A rather compact, deep, cup-shaped nest, closely resembling in form and make-up, the nest of the Yellow Warbler. Composed chiefly of small stems or twigs from plants, and flaxen, fuzzy, fibrous strippings from the same, with a few scattering blades of grass, and here and there an occasional feather; and lined thickly and rather evenly with fine, hair-like stems from grasses. Eggs three or four, .72x.54; cream white, thinly speckled and spotted with reddish brown, thickest about the larger end; in form, ovate. A set of three eggs, taken June 17th, 1886, in a thick, second growth of timber at Beattie, Kansas, by Mr. Geo. F. Brenniger, measure: .69x.55, .70x.55, .70x.55; and a set of four, taken June 17th, 1881, at Galesburg, Illinois: .70x.54, .72x.54, .72x.55, .72x.55.

Empidonax minimus (BAIRD).

LEAST FLYCATCHER.

PLATE XXIV.

Migratory; common in the eastern portion of the State. Arrive the last of April; return in September; a few occasionally remain into October.

B. 142. R. 326. C. 387. G. 160, 179. U. 467.

HABITAT. Temperate eastern North America; west to the Yellowstone River and base of Rocky Mountains in Colorado; south in winter to Panama.

SP. CHAR. "Second quill longest; third and fourth but little shorter; fifth a little less; first intermediate between fifth and sixth. Tail even. Above olive brown, darker on the head, becoming paler on the rump and upper tail coverts. The middle of the back most strongly olivaceous. The nape (in some individuals) and sides of head tinged with ash. A ring round the eye and some of the loreal feathers white; the chin and throat white. The sides of the throat and across the breast dull ash, the color on the latter sometimes nearly obsolete; sides of the breast similar to the back, but of a lighter tint; middle of the belly very pale yellowish white, turning to pale sulphur yellow on the sides of the belly, abdomen and lower tail coverts. Wings brown; two narrow white bands on the wings, formed by the tips of the first and second coverts, succeeded by one of brown. The edge of the first primary and of the secondaries and tertials white. Tail rather lighter brown, edged externally like the back. Feathers narrow, not acuminate, with the ends rather blunt. In autumn the white parts are strongly tinged with yellow. Young with ochraceous instead of grayish white wing bands."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.20	8.00	2.40	2.20	.64	.40
Female . . .	5.00	7.70	2.30	2.10	.64	.40

Iris brown; bill, upper black, under pale brownish at base; legs, feet and claws black.

This active, familiar species inhabits the edges of woodlands, hedges, orchards and groves about the dwelling houses. They are quite abundant in suitable localities throughout their range, breeding from about 40° northward. During the breeding season they are very watchful guardians of their homes; pugnacious, tyrannical little fellows, that dart with fury, rapidly snapping their bills at any bird that ventures within their grounds. This bold, combative spirit dies out with the breeding season, and they then become inoffensive, peaceable birds, that do not appear to be angered at the presence of others. Like all of the family, they are expert fly catchers, and for a dessert pluck the small berries in their season. Their common note is an oft-repeated (at intervals emphatic), "Che-beck." They also occasionally utter, with fluttering wings, a low, twittering song, or rather an unmusical effort in that direction.

Their nests are usually placed in upright forks of small trees, sometimes on a horizontal limb; a small, compact felted nest, composed of rootlets, fine soft fibrous strippings from plants, intermingled with vegetable down, and lined with fine grasses, shreds of bark, and frequently insect cocoons and small downy feathers. Eggs two to four, .64x.50; pure to buff white; in form, ovate. A set of four eggs, taken June 15th, 1882, at Pewaukee, Wisconsin, in the upright forks of a small oak tree, and about ten feet from the ground, measure: .62x.51, .63x.51, .64x.50, .64x.50.

SUBORDER OSCINES. SONG BIRDS.

"Sides of the tarsus covered in most or all of their extent with two undivided horny plates, meeting behind in a sharp ridge (except in *Alaudidæ*; one of the plates imperfectly divided in a few other forms). Musical apparatus highly developed, consisting of several distinct pairs of syringeal muscles. Primaries nine only, or ten with the first frequently spurious, rarely over two-thirds the length of the longest, never equaling the longest."

FAMILY **ALAUDIDÆ.** LARKS.

"First primary very short or wanting. Tarsi scutellate anteriorly and posteriorly, with the plates nearly of corresponding position and number. Hind claws very long and nearly straight. Bill short, conical, frontal feathers extending along side of the bill; the nostrils concealed by a tuft of bristly feathers directed forward. Tertials greatly elongate beyond the secondaries."

GENUS **OTOCORIS** BONAPARTE.

No spurious primaries; tail even, or slightly rounded; crown without crest, but on each side of the occiput an erectile, narrow, horn-like tuft of lengthened black feathers; plumage of adult with plain brown or vinaceous tints prevailing above, the lower parts mainly plain white, the head and chest with bold, black markings (less conspicuous in female). *Ridgway.*

Otocoris alpestris praticola HENSH.

PRAIRIE HORNED LARK.

PLATE XXIV.

Resident in the eastern portion of the State, not observed in the western; abundant during the winter months. Begin laying the last of March.

B. —. R. —. C. —. G. —, 181. U. 474b.

HABITAT. The upper Mississippi Valley and region of the great lakes, west to central Dakota and Kansas; south in winter to South Carolina and central Texas.

SP. CHAR. *Adult male, in spring:* Posterior portion of crown, occiput, nape, sides of neck and breast, lesser wing coverts and shorter upper tail coverts light vinaceous; back, scapulars and rump grayish brown, the feathers with darker centers, becoming darker and much more distinct on the rump; middle wing coverts light vinaceous terminally, brownish gray basally. Wings (except as described) grayish brown, the feathers with paler edges; outer primary with outer web chiefly white. Middle pair of tail feathers light brown (paler at edges), the central portion (longitudinally) much darker, approaching dusky; remaining tail feathers uniform black, the outer pair with exterior web broadly edged with white. Longer upper tail coverts light brown, edged with whitish, and marked with a broad lanceolate streak of dusky. Forehead (for about .15 of an inch) yellowish white, this continued back in a broad superciliary stripe of nearly pure white; fore part of crown (for about .35 of an inch) deep black, continued laterally back to and including the ear-like tufts; lores, suborbital region, and broad patch on cheeks (with convex posterior outline), deep black; jugular crescent also deep black, this extending to the lower part of throat; chin and throat pale straw yellow, gradually fading into white on sides of foreneck; anterior half of ear coverts white, posterior half drab gray, each portion forming a crescent-shaped patch. Lower parts posterior to the jugulum crescent pure white, the sides of the breast light vinaceous, the sides similar, but brown, and

indistinctly streaked with darker. Upper mandible plumbeous black, lower bluish plumbeous; iris deep brown; legs and feet brownish black. *Adult male, in winter:* Similar to the spring plumage but darker, with the vinaceous somewhat obscured by grayish brown, the black by pale tips to the feathers, and yellow of throat slightly deeper. *Adult female, in spring:* Above, grayish brown, the pileum narrowly and distinctly, the dorsal region broadly and less sharply. streaked with dusky; nape, lesser wing coverts and shorter upper tail coverts dull light vinaceous, the first very distinctly streaked. A narrow frontlet and broader superciliary stripe (the latter very sharply defined above) dull white; lores, suborbital region and triangular patch on cheeks dull brownish black, without sharp definition posteriorly; auriculars drab, the anterior half lighter; chin and throat white, the former faintly tinged with yellowish; jugular crossed by a distinct band of black, narrower and less intense in color than in the male; rest of lower parts white, tinged with pale brownish on breast, the sides (especially of breast) pale Isabella brownish, the flanks indistinctly streaked with darker. *Adult female, in winter:* Differing from the summer plumage in being browner, and with the streaks of the pileum less distinct, the whitish frontlet obsolete, and the superciliary stripe less sharply defined; the lores, suborbital region and cheeks dull brownish, like the auriculars, the latter with an indistinctly lighter central spot; chin and throat dull buffy white, with a tinge of straw yellow, changing to clearer buffy white on sides of foreneck; jugulum with an indistinct blackish patch, the feathers broadly bordered with dull whitish. Whole breast and sides light Isabella color, indistinctly streaked with darker; abdomen and crissum white. *Young, first plumage:* Above, brownish black, the wings brownish; back dotted with sharply defined deltoid and rhomboid specks of white; pileum with similar but much more minute markings, and rump also varied in the same manner, but spots rather more transverse than on the back. Lesser and middle wing coverts brownish black, broadly tipped with buffy white; greater coverts dusky, edged with Isabella brown, and narrowly tipped with pale buff; prevailing color of closed remiges Isabella brown, the tertials, however, darker brown, bordered with buff, this bordered internally with a dusky submargin. Lower parts dull white, the jugulum, sides of breast, and sides, dull Isabella buff, spotted or clouded with dusky. (*Henshaw.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.40	13.25	4.20	2.90	.83	.45
Female . . .	6.90	12.25	4.00	2.75	.80	.45

Iris brown; bill dark brown to blackish, with under pale or bluish white at base; legs and feet blackish; claws black.

The races of this family so gradually shade into each other that it is often perplexing to satisfactorily separate and determine the same.

The birds inhabit the old fields, roadsides, prairies and plains. They are terrestrial and gregarious in their habits, and often to be seen during the winter months running about with the Snow-

flake and Longspur, in their search for fallen seeds from weeds and grasses, of which their food chiefly consists, except during the breeding season, when they prove to be expert insect catchers, on the wing as well as in a running chase. During the early part of the breeding season the males are quite gallant; and move about with a proud step and graceful nod of the head, and when they are ready to burst forth in song they are so inflated with joy that the earth will not hold them, and their low, twittering notes (rather unmusical to us, but no doubt charming to the female of their choice) are uttered on expanded wings as they soar upward. They are not shy birds, and when approached squat close to the ground and remain motionless until flushed, when they rise, one after the other, with a sharp note, circle around for a short time, and then drop back near the starting point.

Their nests are placed in a depression in the ground, usually under a tuft of grass and often in very exposed situations. They are loosely made of bits of old grasses, and occasionally lined with hairs. Eggs four or five, .85x.62; grayish to light greenish drab, thickly speckled and spotted with lavender to olive brown; in form, ovate.

Otocoris alpestris arenicola HENSH.

DESERT HORNED LARK.

PLATE XXIV.

Resident in the western to middle portion of the State; common; abundant during the winter. Begin laying early in April.

B. —. R. —. C. —. G. —, 182. U. 474c.

HABITAT. Region of the Great Plains, Rocky Mountains, and the great basin; north into the British possessions; south to about latitude 34°.

SP. CHAR. *Male:* Crown, nape, rump, lesser wing coverts and sides of body pale vinaceous, feathers of middle back dark brown centrally, darker towards the rump, not however, taking the form of distinct streaks. Exterior surface of wing near shoulder very pale cinnamon. A broad crescent of black from forehead to behind the eyes, bordered by white below. Malar and pectoral patch black; below white; tail black, except the two middle feathers, which are dark brown edged with pale cinnamon; outer tail feathers edged with white; throat pale yellow. *Female:* General colors similar. Feathers of occiput dark brown medially, like the back; throat showing lines only of yellow. (*Henshaw.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.30	13.25	4.20	2.90	.83	.48
Female . . .	6.90	12.30	4.05	2.70	.80	.45

Iris brown; bill dark brown to dusky, with under bluish white at base; legs and feet blackish; claws black.

This western form does not differ in habits or actions from the Prairie Horned Lark. Nest and eggs similar.

FAMILY **CORVIDÆ**. CROWS, JAYS, MAGPIES, ETC.

"Primaries ten; the first short, generally about half as long as the second (or a little more); the outer four sinuated on the inner edge. The nasal fossa and nostrils usually more or less concealed by narrow, stiffened bristles (or bristly feathers), with short, appressed lateral branches extending to the very tip, all directed forward (these bristles occasionally wanting). Tarsi scutellate anteriorly, the sides undivided (except sometimes below), and separated from the anterior plates by a narrow, naked strip, sometimes filled up with small scales. Basal joint of middle toe united about equally to the lateral, generally for about half the length. Bill generally notched."

SUBFAMILY **GARRULINÆ**. MAGPIES AND JAYS.

"Wings short, rounded; not longer or much shorter than the tail, which is graduated, sometimes excessively so. Wings reaching not much beyond the lower tail coverts. Bristly feathers at base of bill variable. Bill nearly as long as the head, or shorter. Tarsi longer than the bill or middle toe. Outer lateral claws rather shorter than the inner."

GENUS **PICA** BRISSON.

"Tail very long, forming much more than half the total length; the feathers much graduated; the lateral scarcely more than half the middle. First primary falcate, curved, and attenuated. Bill about as high as broad at base; the culmen and gonys much curved, and about equal; the bristly feathers reaching nearly to the middle of the bill. Nostrils nearly circular. Tarsi very long; middle toe scarcely more than two-thirds the length. A patch of naked skin beneath and behind the eye."

Pica pica hudsonica (SAB.).

AMERICAN MAGPIE.

PLATE XXIV.

Formerly a resident; rare; now an occasional fall and winter visitant. Begin laying early in April.

B. 432. R. 286. C. 347. G. 145, 183. U. 475.

HABITAT. Western North America (not found in California); north to Alaska; east to the edge of the plains; casually farther;

known to straggle in winter to northern Illinois and Michigan; south to Arizona.

SP. CHAR. "Bill and naked skin behind the eye black; general color black. The belly, scapulars and inner webs of the primaries white; hind part of back grayish; exposed portion of tail feathers glossy green, tinged with purple and violet near the end; wings glossed with green; the secondaries and tertials with blue; throat feathers spotted with white in younger specimens. *Young:* In color and appearance similar, generally, to the adult."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	20.50	24.50	8.25	12.00	1.90	1.30
Female . .	19.00	23.00	7.75	10.75	1.80	1.20

Iris brownish black; legs, feet and claws black.

These birds inhabit the open woods and trees skirting the streams. They are quite common in the central portion of their range. I have found them quite abundant in Colorado, especially along the streams in the foot hills, or lower portion of mountain regions. From all appearances they remain mated during the year, but being of rather a social nature are often met with in small flocks or family groups. They are shy, wary, crafty, noisy birds, and where hunted much, rather difficult to capture, not as a rule wildly flying away, but rather seem to delight for a short time in tempting one to follow, by scolding and fussing about, just out of reach. In flight they are sustained by rapid strokes of the wings, and while quite swift and direct, the effort is too great for an extended flight.

Its voice is capable of producing a variety of sounds, from a harsh clatter to soft, whistling notes. When taken young they are easily tamed, and soon learn to perform various tricks, and to fairly imitate many words, but like all of the family are great thieves, and cannot resist the temptation to carry away and hide, especially any small, bright or shining article, and they are therefore not desirable pets. In their food habits omnivorous, feeding freely upon offal, carrion, insects, fruits, nuts and grains. The slaughter houses have great attractions for them. I secured my first bird at one.

Their nests are placed in low, scrubby trees and bushes, along the streams, usually from six to fifteen feet from the ground. They are composed of sticks and twigs, the inside plastered with

mud, and lined sparingly with grasses and a few feathers; upon this a rough, dome-like structure of sticks, ingeniously woven, completely covers the nest, leaving a small hole on the side for entrance. Several of the nests that I found in Colorado had two openings, and opposite to each other, doubtless to make room for and protect the long tail of the bird, which must be more or less injured where but one entrance is constructed. Eggs six to nine, 1.30x.92; light green, thickly speckled and spotted with drab to purplish brown; in form, oval to ovate.

GENUS **CYANOCITTA** STRICKLAND.

"Head crested. Wings and tail blue, with transverse black bars; head and back of the same color. Bill rather slender, somewhat broader than high at the base; culmen about equal to the head. Nostrils large, nearly circular; concealed by bristles. Tail about as long as the wings, lengthened, graduated. Hind claw large, longer than its digit."

Cyanocitta cristata (LINN.).

BLUE JAY.

PLATE XXIV.

Resident; abundant in the eastern portion of the State; common along the streams, where skirted with trees, to a little beyond the center; not observed in the extreme western part. Begin laying the last of April.

B. 434. R. 289. C. 349. G. 146, 184. U. 477.

HABITAT. Eastern United States, except Florida (where they are replaced by *C. cristata florincola*); north into the fur regions of the British possessions; west to the Great Plains.

SP. CHAR. "Crest about one-third longer than the bill. Tail much graduated. General color above light purplish blue; wings and tail feathers ultramarine blue; the secondaries and tertials, the greater wing coverts, and the exposed surface of the tail, sharply banded with black and broadly tipped with white, except on the central tail feathers. Beneath, white; tinged with purplish blue on the throat, and with bluish brown on the sides. A black crescent on the fore part of the breast, the horns passing forward and connecting with a half collar on the back of the neck. A narrow frontal line and loreal region black; feathers on the base of the bill blue, like the crown. *Female*: Rather duller in color, and a little smaller."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	12.00	17.50	5.60	5.60	1.35	1.00
Female	11.25	16.70	5.35	5.35	1.30	1.00

Iris dark brown; bill, legs, feet and claws black.

I know that I cannot please the reader better than by giving the following interesting description, by Nuttall, of this handsome, conspicuous bird, of questionable character, wherein he says:

“The Blue Jay is a constant inhabitant both of the wooded wilderness and the vicinity of the settled farm, though more familiar at the approach of winter and early in spring than at any other season. These wanderings or limited migrations are induced by necessity alone; his hoards of grain, nuts and acorns either have failed or are forgotten; for, like other misers, he is more assiduous to amass than to expend or enjoy his stores, and the fruits of his labors very frequently devolve to the rats or squirrels, or accidentally assist in the replanting of the forest. His visits at this time are not unfrequent in the garden and orchard, and his usual petulant address of “Djâ, jâ, jâ,” and other harsh and trumpeting articulations, soon make his retreat known to all in the neighborhood. So habitual is this sentinel cry of alarm, and so expressive, that all the birds within call, as well as other wild animals, are instantly on the alert, so that the fowler and hunter become generally disappointed of their game by this his garrulous and noisy propensity; he is therefore, for his petulance, frequently killed without pity or profit, for his flesh, though eaten, has little to recommend it. His more complaisant notes, when undisturbed, though guttural and echoing, are by no means unpleasant, and fall in harmoniously with the cadence of the feathered choristers around him, so as to form a finishing part to the general music of the grove. His accents of blandishment, when influenced by the softer passions, are low and musical, so as to be scarcely heard beyond the thick branches where he sits concealed; but, as soon as discovered, he bursts out into notes of rage and reproach, accompanying his voice by jerks and actions of temerity and defiance. . . . He also exhibits a great antipathy to the Owl, and by his loud and savage vociferation soon brings together a noisy troop of all the busy birds in the neighborhood. To this garrulous attack the night wanderer has no reply but a threatening stare of

indifference; and, as soon as opportunity offers, he quietly slips from his slandering company. Advantage, in some countries, is taken of this dislike for the purpose of catching birds; thus the Owl being let out of a box, sometimes makes a hoot, which instantly assembles a motley group, who are then caught by liming the neighboring twigs on which they perch. In this gossip the Jay and Crow are always sure to take a part, if within sight or hearing of the call, and are thus caught or destroyed at will. The common Jay is even fond of imitating the harsh voice of the Owl and the noisy Kestrel. I have also heard the Blue Jay mock, with a taunting accent, the "Kē-oo, kē-oo," or quailing of the Red-shouldered Hawk. Wilson likewise heard him take singular satisfaction in teasing and mocking the little American Sparrow Hawk, and imposing upon him by the pretended complaints of a wounded bird, in which frolic several would appear to join, until their sport sometimes ended in sudden consternation, by the Hawk, justly enough, pouncing on one of them as his legitimate and devoted prey.

"His talent for mimicry, when domesticated, is likewise so far capable of improvement as to enable him to imitate human speech, articulating words with some distinctness; and on hearing voices, like a parrot, he would endeavor to contribute his important share to the tumult. Bewick remarks of the common Jay, that he heard one so exactly counterfeit the action of a saw, that though on a Sunday, he could scarcely be persuaded but that some carpenter was at work. Another, unfortunately, rendered himself a serious nuisance by learning to hound a cur dog upon the domestic cattle, whistling and calling him by name, so that at length a serious accident occurring in consequence, the poor Jay was proscribed. The Blue Jay becomes also, like the Crow and Magpie, a very mischievous purloiner of everything he is capable of conveying away and hiding. . . .

"The favorite food of this species is chestnuts, acorns, and Indian corn or maize, the latter of which he breaks before swallowing. He also feeds occasionally on the larger insects and caterpillars, as well as orchard fruits, particularly cherries, and does not even refuse the humble fare of potatoes. In times of

scarcity he falls upon carrion, and has been known to venture into the barn, through accidental openings; when, as if sensible of the danger of purloining, he is active and silent, and if surprised, postponing his garrulity, he retreats with noiseless precipitation, and with all the cowardice of a thief. The worst trait of his appetite, however, is his relish for the eggs of other birds, in quest of which he may frequently be seen prowling, and with a savage cruelty he sometimes also devours the callow young, spreading the plaint of sorrow and alarm wherever he flits. The whole neighboring community of little birds assemble at the cry of distress, sometimes, however, succeeding in driving off the ruthless plunderer, who, not always content with the young, has been seen to attack the old, though with dubious success; but to the gallant and quarrelsome Kingbird he submits like a coward, and driven to seek shelter, even on the ground, from the repeated blows of his antagonist, sneaks off well contented to save his life."

Their nests are placed on branches, near the trunks or bodies of trees and bushes, in the forests, and in the vicinity of dwellings, six to thirty feet from the ground. They are rudely composed of small sticks, roots and various kinds of material at hand, strongly interwoven, and lined with fine rootlets. Eggs four or five, 1.10x.82; olive, sparingly spotted with drab and olive brown; in form, ovate.

SUBFAMILY CORVINÆ. CROWS.

"Wings long and pointed; longer than the tail, and, when closed, reaching nearly to its tip, extending far beyond the under tail coverts; the third, fourth and fifth quills forming the tip of the wing."

GENUS CORVUS LINNÆUS.

"The nasal feathers lengthened, reaching to or beyond the middle of the bill. Nostrils large, circular, overhung behind by membrane, the edges rounded elsewhere. Rictus without bristles. Bill nearly as long as the tarsus, very stout; much higher than broad at the base; culmen much arched. Wings reaching nearly or quite to the tip of the tail, the outer four primaries sinuated internally. Tarsi longer than the middle toe, with a series of small scales on the middle of each side separating the anterior scutellate portion from the posterior continuous plates. Sides of the head occasionally with nearly naked patches. Tail graduated or rounded."

Corvus corax sinuatus (WAGL.).

MEXICAN RAVEN.

PLATE XXIV.

Formerly a resident; never common; may still occasionally breed in unsettled localities, but disappear as the settlements increase, and probably at the present time only a visitant to the State.

B. 423, 424. R. 280. C. 338. G. 141, 185. U. 486.

HABITAT. Western United States; south to Guatemala. I am unable to give its northern and eastern range to where it is replaced by the northern form, *C. corax principalis*.

SP. CHAR. *Adult:* Tail graduated; feathers of throat lanceolate; those of neck, jugulum and fore part of back gray at bases. Entire plumage glossy black, the upper parts, especially wings and tail, with rich purplish reflections. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	25.00	50.00	17.25	10.00	.60	2.75
Female . . .	22.50	46.00	15.75	9.00	.50	2.60

Iris dark brown; bill, legs, feet and claws black.

These magnificent stately birds are quite common in the Rocky Mountain region and westward, especially in Lower California and the adjacent isles, where I found them breeding in abundance on the steep, rocky cliffs, subsisting and feeding their little ones almost exclusively upon the eggs and young of the Gulls, Boobies and the many water birds that nest in communities, where they are to be seen silently perched upon a tree or rock, ready the moment the parent birds leave a nest to dash down, kill the young or pierce an egg with their bill and carry it safely away. A bold, sagacious bird, and, when not shot at, will closely follow the intruder in order to rob the nests of the birds frightened away. They are indiscriminate eaters, greedily devouring offal, carrion, fruits, grain, etc. Young lambs and pigs often help to make up their bill of fare.

They are not garrulous like the Jay, or as noisy as the Crow, but they can and do croak vigorously at times, and with various modulations. They also have a habit, when at rest, of uttering in a low voice a self-satisfied, chuckling, cawing attempt at song. They are naturally solitary, unsocial birds, and when found in

flocks show no attachment outside of the mated pairs, except when one is wounded or in trouble and calls for help.

They are very intelligent, easily tamed, and capable of learning many tricks, and would be entertaining pets were it not for their thieving propensities. Pages of interesting anecdotes could be given showing that the birds are capable of thinking, yes, reasoning well.

Their nests are placed on the sides of high, precipitous cliffs and in trees; a coarse, bulky structure of sticks, lined with grasses, hairs, and sometimes bits of wool and moss. Eggs, 1.88x1.30; light greenish blue, thickly spotted and blotched with purple and blackish brown, in some cases chiefly at larger end; in form, oval to ovate. A set of five eggs, taken March 24th, 1884, from a nest on the side of a high, steep, rocky bank, on the beach, in northwestern Lower California, measure: 1.88x1.26, 1.88x1.30, 1.90x1.30, 1.91x1.30, 2.00x1.30.

***Corvus cryptoleucus* (COUCH).**

WHITE-NECKED RAVEN.

PLATE XXIV.

A resident in the western part of the State; rare; quite common during the fall and winter, but decreasing in numbers as the settlements increase. Begin laying in May.

B. 425. R. 281. C. 339. G. 142, 186. U. 487.

HABITAT. Southwestern United States and table lands of Mexico; north to southern Wyoming—on the Pacific side I can find no mention north of southern California; east to the edge of the Plains; south to about latitude 20°.

SP. CHAR. "The fourth quill longest; the third and fifth equal; the second longer than the sixth; the first about equal to the seventh. Glossy black, with violet reflections; feathers of neck all round, back and breast, snow white at the base; feathers of throat lanceolate; bristly feathers along the base of the bill, covering it for nearly two-thirds its length."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	21.00	43.00	14.25	8.50	2.35	2.20
Female . . .	19.50	41.50	13.50	8.00	2.30	2.20

Iris dark brown; bill, legs, feet and claws black.

These birds of the plains are essentially the same in habits and actions as the Mexican Raven, differing, however, in their manner of nesting, and are more gregarious. I first met with them in New Mexico, in the fall of 1880, and captured my first pair at San Marcial. I copy from my notes written at the time:

“I was surprised to find the birds so abundant in this vicinity (San Marcial). They were in company with the common Raven — *C. corax sinuatus* — from which they were readily distinguished by their smaller size, slimmer build, and in flight, by their wings, which appear less rounded. I first noticed a pair at Galisteo, and now and then one or more on my way down the Rio Grande; but nowhere abundant until I reached this place (the present terminus and headquarters of the railroad builders of the A. T. & S. F. R. R., which will soon be completed to El Paso), where they have assembled in numbers to feed about the camps of the graders and workmen scattered along the line. I am told that they follow the railroad builders, rarely ever far to the front or rear. They are quite bold, flocking about the camps as soon as the men roll out for work, to pick up the scattering grains where the horses and mules have been fed, and the offal about the tents. I counted one morning at sunrise over a hundred, and with them at least thirty common Ravens.

“Their voice differs in not being so loud and coarse; and I now know from their notes that I saw, several years ago, a pair at McAllister, Indian Territory.”

I will add that I have since met with the birds in Arizona, Mexico, Colorado, and several times in western Kansas. The following interesting description of their nesting habits is given by Capt. Chas. Bendire:

“This species is the most abundant of the *Corvidæ* found in Arizona, and is a resident throughout the year. It is not at all shy. Lieutenant Benson writes me, that numbers of them are seen almost daily about the officers’ and men’s quarters, at Fort Huachuca, and that they are so tame that they will often let one pass within twenty feet of them without flying off. I have personally shot numbers of them, in my camp on Rillito Creek, in

the winter of 1872, where I found them quite common, but they did not breed in that vicinity to any great extent. After riding many miles, and patiently searching, I succeeded in finding two of their nests with eggs, one on May 6, the other on June 5, 1872. Both of these nests were placed in the tops of oak trees, from fifteen to twenty feet from the ground, in the foot hills of the Santa Catarina and Rincon Mountains, respectively.

“Lieutenant Benson was more fortunate in finding the nests of this species, taking over fifty sets of their eggs between May 8th and June 18th of this present year. He states in one of his letters to me that the White-necked Raven, in the vicinity of Fort Huachuca, usually builds in mesquit bushes, from seven to fifteen feet from the ground, placing the nests in the top. Occasionally a pair will build on top of a yucca plant. The nests are mostly found on the more open plains, not far from the edge of the thicker chaparral, and usually within a mile of this more bushy tract. The nests are constructed of sticks of various sizes; the cavity is rather deep, and this is lined with hair of cattle and rabbits, and frequently with pieces of the hide of these animals.

“They are extremely filthy, and smell horribly. Old nests are repaired from year to year, some of them being, as Lieutenant Benson expresses it, ‘seven or eight stories,’ showing use for many years. The series of eggs of this Raven is one of the finest and most complete in the National Museum collection, containing nearly three hundred specimens, almost all obtained from Lieutenant Benson. Their ground color ranges from a light green to a pale grayish green, and this is more or less covered with numerous streaks, blotches and spots of sepia brown and French gray, as well as in some instances of dark moss green and deep grayish olive markings. One peculiar and constant feature of these eggs is their resemblance in the pattern of the less pronounced markings (the lighter colored ones) to those found in the eggs of the genus *Myiarchus*, in this: that these markings run lengthways of the egg, or from pole to pole, a feature not found by me in the eggs of the common Crow, *Corvus americanus* Aud., and only very rarely in those of the



PLATE XXV.

AMERICAN CROW; Male. 2. CLARK'S NUTCRACKER; Male. 3. Female. 4. PINON JAY; Female. 5. BOBOLINK; Male. 6. FEMALE. 7. COWBIRD; Male. 8. FEMALE. 9. YELLOW-HEADED BLACKBIRD; Male. 10. Red-winged Blackbird; Male. 11. Meadowlark; Male. 12. Female. 13. Meadowlark; Male. 14. Female. 15. Western Meadowlark; Male. 16. Female. 17. Orchard Oriole; Male. 18. Female. 19. Juvenile Male.

Raven, *Corvus corax sinuatus* WAGL., the eggs of both of these species being also represented by excellent series in the Museum collection. The general average of the eggs of the White-necked Raven is much lighter colored than the eggs of above mentioned species—one set, indeed, is almost unspotted; and usually there is one egg in each set which is much lighter colored generally than the balance. All the eggs of this species can readily be distinguished from those of the balance of the *Corvidæ* which breed within the limits of the United States. The usual shape of these eggs is an elongated ovate, and there is a great variation in their size.

“Three of the largest measure as follows: 1.92x1.33, 1.95x1.25, 2.00x1.24 inches.

“Three of the smallest measure: 1.57x1.17, 1.62x1.08 and 1.52x1.09 inches. Their average size is about 1.78 inches in length by 1.16 in width.

“From four to seven eggs are laid to a set, six being the most common number found, and presumably but one brood is raised a year.”

Corvus americanus AUD.

AMERICAN CROW.

PLATE XXV.

Resident; abundant in the eastern part of the State, not common in the western portion. Begin laying the last of March to the first of April.

B. 426. R. 282. C. 340. G. 143, 187. U. 488.

HABITAT. North America, from the fur countries to Mexico.

SP. CHAR. “Tail slightly rounded. Feathers of throat short, blended; those of the neck, etc., dusky grayish at bases. *Adult*: Deep black, with violet gloss, the latter fainter on lower parts.”

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	19.00	38.00	13.00	8.00	2.30	2.00
Female	18.50	37.00	12.50	7.90	2.30	2.00

Iris dark brown; bill, legs, feet and claws black.

As much as I love the birds, I cannot find it in my heart to put in a plea for this well known nest robber and bird of ill repute, for their thievish propensities are too great to attempt to

show that the good they do overbalances the harm. Various are the ways resorted to by the farmer to not only scare them away, but to destroy them. Notwithstanding this, the cunning, sagacious birds manage to live and thrive in their midst. They are rather gregarious and social in their habits, often assembling together in large flocks, and they select and have common roosting places, where they gather from miles and miles around, arriving silently at eve, and stealing away at early dawn. Their flights are direct and well sustained.

Their nests are placed in the forks of trees, in groves and on the timbered bottom lands, thirty to seventy feet from the ground. They are composed of sticks and lined with grasses, fibrous strippings from plants, and hairs. Eggs four or five, 1.65x1.20; light to dark green, and irregularly spotted, splashed or blotched with various shades of pale to dark brown and purple, usually the thickest around the larger end; in form, oval to ovate.

GENUS **PICICORVUS** BONAPARTE.

"Leaden gray color, with black wings and tail; bill longer than the head, considerably longer than the tarsus, attenuated, slightly decurved; tip without notch; culmen and commissure curved; gonys straight or slightly concave, as long as the tarsi; nostrils circular, completely covered by a full tuft of incumbent white bristly feathers; tail much shorter than the wings, nearly even, or slightly rounded. Wings pointed, reaching to the tip of the tail; third, fourth and fifth quills longest; tarsi short, scarcely longer than the middle toe, the hind toe and claw very large, reaching nearly to the middle of the middle claw, the lateral toe little shorter. A row of small scales on the middle of the sides of tarsus; color of the single species leaden gray, with black wings and tail."

Picicorvus columbianus (WILS.).

CLARK'S NUTCRACKER.

PLATE XXV.

An accidental visitant. Mr. L. L. Jewell, of Irving, kindly sent me for examination a portion of the skin saved from a male bird, shot August 13th, 1888, by Mr. Chas. Netz, near the south line of Marshall county.

B. 430. R. 284. C. 344. G. —, —. U. 491.

HABITAT. The high, coniferous forests of western North America; north to Alaska; south to Arizona; east to the edge

of the plains. (Dr. Cooper met with a straggling pair at Ft. Kearney, Neb., and Mr. G. S. Agersborg, a pair in southeastern Dakota; but, like the Kansas visitant, they were accidental wanderers. They are seldom found below an altitude of 4,000 feet.)

SP. CHAR. "Tail rounded or moderately graduated, the closed wings reaching nearly to its tip. Fourth quill longest; second considerably shorter than the sixth. General color bluish ash, changing on the nasal feathers, the forehead, sides of head (especially around the eye), and chin, to white. The wings, including their inner surface, greenish black; the secondaries and tertials, except the innermost, broadly tipped with white; tail white; the inner web of the fifth feather and the whole of the sixth, with upper tail coverts, greenish black. The axillars plumbeous black. Bill and feet black. Young similar in color, without additional markings of any kind. The gonys, however, convex, and the bill generally more like that of the Jays."

Dimensions of a pair in "The Goss Ornithological Collection," shot March 5th, 1879, near Central City, Colorado:

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	13.25	23.25	7.75	5.00	1.30	1.60
Female	12.00	21.50	7.25	4.50	1.20	1.45

Iris dark brown; bill, legs, feet and claws black.

This bird has the actions and habits of several species. Like the Jays, it is at times noisy, and in flocks, and when upon the ground hops about in the same manner; it clings, like the Woodpecker, to the side of a tree, while it hunts for and extracts from old excavations, interstices of the bark, etc., the various forms of life found therein; and its flights are similar. In clasping with its sharp claws the cones on the pines and other coniferous trees, in order to pry with its bill for the seeds, it often hangs with its head downward, swaying back and forth with the ease and movements of the Titmouse. The birds are very shy, and, at or near their nesting places, silent.

In May, 1879, my brother found the birds breeding near Fort Garland, Colorado. It was too late in the season for their eggs, but in one nest he found young birds; he says the old bird sat very close, only leaving when touched by his hand. The nest was built near the end of a horizontal limb of a pine tree, and about ten feet from the ground, in an open, conspicuous situation. It was bulky, and coarsely constructed of sticks, twigs, strips of bark, rootlets, grass, moss, etc., and very deeply hol-

lowed, the bird when on the nest showing only part of her bill and tail, pointing almost directly upward. At a distance it would be taken for a squirrel's nest. Capt. Chas. Bendire writes me that, during the month of April, 1876-8, he found, in the vicinity of Camp Harney, Oregon, quite a number of their nests, as described above, with eggs, and gives the following dimensions of four eggs: 1.30 x .92, 1.26 x .95, 1.22 x .95, 1.20 x .90. Usual number three; ground color light grayish green, irregularly spotted and blotched with a deeper shade of gray, principally about the larger end; elongated oval in shape, and considerably pointed at the smaller end.

GENUS **CYANOCEPHALUS** BONAPARTE.

"Bill elongated, compressed, shorter than the tarsus, longer than the head, without notch, similar to that of *sturnella* in shape. Culmen nearly straight; commissure curved; gonys ascending. Nostrils small, oval, entirely exposed, the bristly feathers at the base of the bill being very minute. Tail short, nearly even, much shorter than the pointed wings, which cover three-fourths of the tail. Tarsi considerably longer than the middle toe. Color of the single species blue, most intense anteriorly; the throat streaked with white."

Cyanocephalus cyanocephalus (WIED.).

PIÑON JAY.

PLATE XXV.

A rare visitant. Three specimens shot, out of a flock of six or seven, near Lawrence, October 23, 1875. (Reported by Prof. F. H. Snow.)

B. 431. R. 285. C. 345. G. 144, 188. U. 492.

HABITAT. Rocky Mountain region, and coast range of the Pacific slope; north into British America; south to Mexico.

SP. CHAR. "Wings considerably longer than tail, and reaching to within an inch of its tip. Tail nearly even. General color dull blue, paler on the abdomen, the middle of which is tinged with ash; the head and neck of a much deeper and more intense blue, darker on the crown. Chin and fore part of the throat whitish, streaked with blue. Young bird not differing in markings."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	11.00	18.00	5.80	4.75	1.40	1.35
Female . . .	10.60	17.60	5.65	4.50	1.40	1.30

The above are the average measurements of several pairs; they vary somewhat in size, one of the females being fully as large as the males.

Iris dark brown; bill, legs, feet and claws black.

These noisy, characteristic birds are quite common within the central portion of their range. They are gregarious, and very social in their habits, and are usually to be found flying about in flocks, among the scattering cedars and piñons of the open, hilly lands, making their presence known upon all occasions, except about their nesting places, by keeping up their almost continuous, loud, harsh, querulous notes; hurriedly alighting, and passing each other, in their search for food, each anxious to be in the lead, in order to secure the choicest nuts and seeds upon the ground, as well as in the trees. The piñon is the favorite, and in extracting the nuts from cones they often hang feet uppermost, and swing about like the Crossbills. During the breeding season, they prove themselves quite expert and busy insect catchers, darting from a tree top and returning after the capture much like the true Flycatcher.

I have never found the birds very shy, but on account of their restless flights they are not easy to capture by following the trail. When going a distance, their flights are swift and compact, but rather straggling in their search for food.

The following interesting description of their nesting habits, by my brother, is taken from the bulletin of the Nuttall Ornithological Club:

"In May, 1879, I took nine sets of the eggs of the Piñon Jay, in Colorado. Their nests were found all within from five to nine miles east and southeast of Fort Garland. This region lies along the western base of the Sangre de Christo Mountains, is broken by hills and spurs from the main range, and has an elevation of about 9,000 feet. The nests were all in high, open situations, two of them well up the steep mountain sides, and none in valleys or thick timber. All were in small piñon pines, from five to ten feet up, out some distance from the body of the tree, and not particularly well concealed. They are large, coarse and deeply-hollowed structures, much alike, being made mostly of grayish shreds of some fibrous plant or bark, which breaks up into a mass of hair-like fibers, these forming the lining, while some weeds and grass are worked into the general fabric.

I did not measure any of them before removal, and afterward accurate measurement could not be made, as, being loosely constructed, they spread and flattened. They must have been about as deep as wide—deep enough to receive the whole body of the bird, only part of the head and tail showing above the edge. The birds are close sitters, several not leaving the nest till it was shaken, and I could have caught some of them in my hand. On being driven from the nest, they would alight on an adjoining limb, and, with lowered head and half-extended wings, utter their peculiar querulous cry. One nest contained five eggs, six contained four each, and two, three each; both sets of three were partly incubated. Two nests were taken May 5th, five on the 10th and two on the 11th, 1879. The eggs were quite pointed at the smaller end. The ground color is bluish white, splashed all over with small spots of dark brown, thickest at the larger end. Nine eggs measure respectively: 1.19x.88, 1.21x.93, 1.22x.92, 1.25x.91, 1.17x.87, 1.18x.84, 1.17x.85, 1.20x.82, 1.17x.80; average, 1.19x.87.”

The nest is easily seen, and I am surprised that so few have been found. The bird is a restless wanderer, choosing the most unfrequented places. It often changes its haunts, and may be plenty one year where it is scarcely found in another. Probably the food supply has something to do with its movements. It is gregarious, and partly so even in the breeding season.

FAMILY **ICTERIDÆ**. BLACKBIRDS, ORIOLES, ETC.

“Primaries nine. Tarsi scutellate anteriorly; plated behind. Bill long, generally equal to the head or longer, straight or gently curved, conical, without any notch, the commissure bending downwards at an obtuse angle at the base. Gonys generally more than half the culmen, no bristles about the base of the bill. Basal joint of the middle toe free on the inner side; united half way on the outer. Tail rather long, rounded. Legs stout.”

GENUS **DOLICHONYX** SWAINSON.

“Bill short, stout, conical, little more than half the head; the commissure slightly sinuated; the culmen nearly straight. Middle toe considerably longer than the tarsus (which is about as long as the head); the inner lateral toe longest, but not reaching the base of the middle claw. Wings long, first quill longest. Tail feathers acuminate pointed at the tip, with the shaft stiffened and rigid, as in the Woodpeckers.

"The peculiar characteristic of this genus is found in the rigid scansorial tail and the very long middle toe, by means of which it is enabled to grasp the vertical stems of reeds or other slender plants. The color of the single species is black, varied with whitish patches on the upper parts."

***Dolichonyx oryzivorus* (LINN.).**

BOBOLINK.

PLATE XXV.

Summer resident; very rare; during migration quite common. Arrive the last of April to middle of May; begin laying the last of May; return in September.

In the early part of June, 1867, I found a pair in Anderson county, and from actions was positive the birds had a nest near by, but was unable to find it, and I have in "The Goss Ornithological Collection" a male shot May 23d, 1877, near Neosho Falls, out of a small flock. I have often met with them in the State since, but cannot recall seeing them later than the middle of May, and I think their remaining so late, or breeding so far south, rare and exceptional, and that latitude 40° to 41° is their southern breeding limit, and 54° their northern.

B. 399. R. 257. C. 312. G. 129, 189. U. 494.

HABITAT. Eastern North America; north into the fur regions; west to the high plains; south to South America; West Indies.

SP. CHAR. "General color of male in spring, black; the nape brownish cream color; a patch on the side of the breast, the scapulars and rump white, shading into light ash on the upper tail coverts and the back below the inter-scapular region. The outer primaries sharply margined with yellowish white; the tertials less abruptly; the tail feathers margined at the tips with pale brownish ash. In autumn totally different, resembling the female. *Female*: Yellowish beneath; two stripes on the top of the head, and the upper parts throughout, except the back of the neck and rump, and including all the wing feathers, generally dark brown, all edged with brownish yellow, which becomes whiter near the tips of the quills. The sides sparsely streaked with dark brown, and a similar stripe behind the eye. There is a superciliary and a median band of yellow on the head."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.30	12.25	3.90	3.00	1.03	.55
Female . . .	7.00	10.50	3.55	2.80	1.00	.55

Iris brown; bill, upper blackish, under bluish, with the end dusky; legs and feet brown; claws dark brown.

The following description of this familiar species is from "North American Land Birds," Vol. II, p. 150:

"Of all our unimitative and natural songsters, the Bobolink is by far the most popular and attractive. Always original, and peculiarly natural, its song is exquisitely musical. In the variety of its notes, in the rapidity with which they are uttered, and in the touching pathos, beauty and melody of their tone and expression, its notes are not equaled by those of any other North American bird. We know of none among our native feathered songsters whose song resembles or can be compared with it.

"In the earliest approaches of spring, in Louisiana, when small flocks of male Bobolinks make their first appearance, they are said by Mr. Audubon to sing in concert; and their song, thus given, is at once exceedingly novel, interesting, and striking. Uttered with a volubility that even borders upon the burlesque and the ludicrous, the whole effect is greatly heightened by the singular and striking manner in which first one singer, and then another, one following the other, until all have joined their voices, take up the note and strike in, after the leader has set the example and given the signal. In this manner, sometimes a party of thirty or forty Bobolinks will begin, one after the other, until the whole unite in producing an extraordinary medley, to which no pen can do justice, but which is described as very pleasant to listen to. All at once the music ceases, with a suddenness not less striking than extraordinary. These concerts are repeated from time to time, usually as often as the flock alights. This performance may also be witnessed early in April, in the vicinity of Washington, the Smithsonian grounds being a favorite place of resort.

"By the time these birds have reached in their spring migrations the fortieth parallel of latitude, they no longer move in large flocks, but have begun to separate into small parties and, finally, into pairs. In New England the Bobolink treats us to no such concerts as those described by Audubon, where many voices join in creating their peculiar, jingling melody. When they first appear, usually after the middle of May, they are in

small parties, composed of either sex, absorbed in their courtships and overflowing with song. When two or three male Bobolinks, decked out in their gayest spring apparel, are paying their attentions to the same drab-colored female, contrasting so strikingly in her sober brown dress, their performances are quite entertaining, each male endeavoring to outsing the others. The female appears coy and retiring, keeping closely to the ground, but always attended by the several aspirants for her affection. After a contest, often quite exciting, the rivalries are adjusted, the rejected suitors are driven off by their more fortunate competitor, and the happy pair begin to put in order a new home. It is in these love quarrels that their song appears to the greatest advantage. They pour out incessantly their strains of quaint but charming music, now on the ground, now on the wing, now on the top of a fence, a low bush or a swaying stalk of a plant that bends with their weight. The great length of their song, the immense number of short, variable notes of which it is composed, the volubility and confused rapidity with which they are poured forth, the eccentric breaks, in the midst of which we detect the words 'Bob-o-link' so distinctly enunciated, unite to form a general result to which we can find no parallel in any of the musical performances of our other song birds. It is at once a unique and a charming production. Nuttall speaks of their song as monotonous, which is neither true nor consistent with his own description of it. To other ears they seem ever wonderfully full of variety, pathos and beauty.

"When their contests are ended, and the mated pair take possession of their selected meadow, and prepare to construct their nest and rear their family, then we may find the male bird hovering in the air over the spot where his homely partner is brooding over her charge. All this while he is warbling forth his incessant and happy love song; or else he is swinging on some slender stalk or weed that bends under him, ever overflowing with song and eloquent with melody. As domestic cares and paternal responsibilities increase, his song becomes less and less frequent. After a while it has degenerated into a few short notes, and at length ceases altogether. The young in

due time assume the development of mature birds, and all wear the sober plumage of the mother. And now there also appears a surprising change in the appearance of our gaily attired musician. His showy plumage of contrasting white and black, so conspicuous and striking, changes with almost instant rapidity into brown and drab, until he is no longer distinguishable, either by plumage or note, from his mate or young.

“At the north, where the Bobolink breeds, they are not known to molest the crops, confining their food almost entirely to insects, or the seeds of valueless weeds, in the consumption of which they confer benefit rather than harm. At the south, they are accused of injuring the young wheat as they pass northward in their spring migrations, and of plundering the rice plantations on their return. About the middle of August they appear in almost innumerable flocks among the marshes of the Delaware river. There they are known as the Reedbirds. Two weeks later they begin to swarm among the rice plantations of South Carolina. There they take the name of Ricebirds. In October they again pass on southward, and make another halt among the West India Islands. There they feed upon the seeds of the Guinea grass, upon which they become exceedingly fat. In Jamaica they receive a new appellation, and are called Butterbirds. They are everywhere sought after by sportsmen, and are shot in immense numbers for the table of the epicure. More recently it has been ascertained that these birds feed greedily upon the larva of the destructive cotton worm, and in so doing render an immense service to the cultivators of Sea Island cotton.”

Their nests are placed in a depression on the ground, in the grass, on the low bottom lands, composed of slender, wire-like stems of grasses. Eggs four or five, .85x.63; ashy white, evenly specked with light drab to grayish and reddish brown, and pale surface markings in the shell; in form, oval. A set of four, taken June 2d, 1867, at Pewaukee, Wisconsin, from a nest on marshy grounds, only measure: .78x.63, .80x.61, .80x.63, .85x.63.

GENUS **MOLOTHRUS** SWAINSON.

"Bill short, stout, about two-thirds the length of head; the commissure straight, culmen and gonys slightly curved, convex, the former broad, rounded, convex, and running back on the head in a point. Lateral toes nearly equal, reaching the base of the middle one, which is shorter than the tarsus; claws rather small; tail nearly even; wings long, pointed, the first quill longest. As far as known, the species make no nest, but deposit the eggs in the nests of other (usually smaller) birds."

Molothrus ater (BODD.).

COWBIRD.

PLATE XXV.

Summer resident; abundant. Arrive early in March to first of April; begin laying about the last of May; return in October; occasionally linger into November.

B. 400. R. 258. C. 313. G. 130, 190. U. 495.

HABITAT. The United States, from the Atlantic to the Pacific; north into the southern British possessions; south in winter to southern Mexico.

SP. CHAR. "Second quill longest; first scarcely shorter; tail nearly even, or very slightly rounded. *Male*: With head, neck and anterior half of the breast light chocolate brown, rather lighter above; rest of body lustrous black, with a violet purple gloss next to the brown, of steel blue on the back, and of green elsewhere. *Female*: Light olivaceous brown all over, lighter on the head and beneath."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.00	13.75	4.40	3.25	1.00	.65
Female . . .	7.25	12.25	3.90	2.70	1.00	.62

Iris brown; bill, legs, feet and claws black.

This widely distributed species are strictly gregarious and polygamous in their habits, and indiscriminate eaters of seeds, grains, berries and insects. During the winter months, in company with the Bobolink and Red-winged Blackbird, do much damage in the rice fields, and are to be looked for in summer about the corrals and grazing grounds, following the cattle and horses about over the range to catch the flies that bite and annoy them; welcome friends, they are allowed to perch and rest upon their backs at pleasure. In spring and early summer the males, with raised feathers, spread tails and throats puffed out, utter a guttural song, or rather attempt at one, which is no doubt pleas-

ing to the females, but in all of their amorous actions there appears to be but little rivalry or jealousy—a happy family of free-lovers.

These birds never build a nest, but drop their eggs into the nests of smaller birds; in doing so, do not try to take possession by force, but by stealth, during the absence of the owners, and, as these birds are polygamous, exhibit no conjugal affection or love for their offspring, leaving the labor and care of hatching and rearing their young to their foster parents; and I find by observation that the egg or eggs so dropped are the first to hatch, and, being much the larger and stronger, receive the greater share of food, the rightful little claimants being soon trodden to death or crowded out of their home.

On account of their manner of laying, we have no way of determining the number of eggs laid in a season. As a rule, but one egg is found in a nest, and I think that, with a view to survival, the bird distributes her eggs, and that the extra ones occasionally found are the eggs of different Cowbirds. They vary greatly in size, averaging about .85x.63; bluish white, thickly spotted and specked with ashy to reddish brown and occasional splashes of purple; in form, oval.

GENUS **XANTHOCEPHALUS** BONAPARTE.

“Bill conical, the length about twice the height; the outlines nearly straight. Claws all very long; much curved; the inner lateral the longest, reaching beyond the middle of the middle claw. Tail narrow, nearly even, the outer web scarcely widening to the end. Wings long, much longer than the tail; the first quill longest.”

Xanthocephalus xanthocephalus (BONAP.).

YELLOW-HEADED BLACKBIRD.

PLATE XXV.

Summer resident; not uncommon; in migration common. Arrive the middle to last of April; begin laying the last of May to first of June; return in September.

On the first of June, 1885, I found quite a colony building in the giant rushes of the genus *Juncus*, growing in marshy ponds, near Crooked Creek, in Meade county; and I have, on several

occasions, found them breeding in small flocks, in different parts of the State.

B. 404. R. 260. C. 319. G. 131, 191. U. 497.

HABITAT. Temperate western North America, from Wisconsin, Illinois and Texas to the Pacific coast; accidental in the Atlantic States; south into Mexico and Cuba.

SP. CHAR. "*Adult male, in summer:* Head, neck and jugulum yellow, varying from a lemon to a rich orange shade—very rarely to a pinkish saffron hue; primary coverts and lower greater wing coverts white; rest of plumage uniform dull black, the lower portion of the tibia and the feathers immediately surrounding the anus yellow; lores, eyelids and feathers bordering the base of the bill also black. *Adult male, in winter:* Similar, but top of the head and nape washed with dusky. *Adult female:* Brownish dusky, the throat and jugulum dull yellow, the middle of the breast mixed with whitish. *Young male, in first winter:* Similar to adult female, but larger and deeper colored. *Young, first plumage:* General color light Isabella brown, or dull brownish buff, the wings and tail dusky."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.30	17.00	5.65	4.55	1.30	.85
Female . .	8.70	14.50	4.50	3.35	1.25	.75

Iris brown; bill bluish black; legs, feet and claws black.

The above measurements are of a pair in "The Goss Ornithological Collection;" as given by other writers, they average a little larger.

These birds are largely terrestrial in their habits, and during the fall and winter months are rather generally distributed over the prairies and plains, often following and running about with the cattle, in company with the Cowbirds; but their natural home is on or about the marshy, reedy grounds, and, during the breeding season, seldom to be met with far away.

I have met with them in central Mexico as far south as latitude 26°, and found them breeding along the Rio Grande, in southern New Mexico; and I am inclined to think they breed in suitable localities throughout their range.

Their notes are harsh and their attempt at song a laborious, whistling, squeaky, chuckling sound. They are rather omnivorous in their food habits; hardly anything eatable comes amiss; in the insect line, grasshoppers and beetles are much sought after.

Their nests are built in reeds and rushes, and are composed of flexible leaves of flags and grasses, lined with a finer material of the same, and attached to and woven in and around the standing, growing stalks. Eggs three to six, usually four; vary greatly in size; according to Ridgway, 1.05x.71. A set of four eggs, taken May 30th, 1882, from a nest, as above, attached to standing, growing rushes, about two feet above the water, on a bog in Pewaukee Lake, Wisconsin, measure: .93x.70, .94x.72, .95x.75, .96x.74; grayish to greenish white, profusely covered with spots and blotches of drab and purplish brown; in form, oval.

GENUS **AGELAIUS** VIEILLLOT.

"First quill shorter than second; claws short; the outer lateral scarcely reaching the base of the middle. Culmen depressed at base, parting the frontal feathers; length equal to that of the head, shorter than tarsus. Both mandibles of equal thickness, and acute at tip, the edges much curved; the culmen, gonys and commissure nearly straight or slightly sinuated; the length of bill about twice its height. Tail moderate, rounded, or very slightly graduated. Wings pointed, reaching to end of lower tail coverts. Colors black with red shoulders in North American species. One West Indian with orange buff. Females streaked except in two West Indian species.

"The nostrils are small, oblong, overhung by a membranous scale. The bill is higher than broad at the base. There is no division between the anterior tarsal scutella and the single plate on the outside of the tarsus."

Agelaius phœniceus (LINN.).

RED-WINGED BLACKBIRD.

PLATE XXV.

A very rare resident; abundant in summer. Begin laying early in May.

B. 401. R. 261. C. 316. G. 132, 192. U. 498.

HABITAT. Temperate North America in general, except western Mexico and lower Colorado valley; north to Great Slave Lake; south to Costa Rica.

SP. CHAR. "Tail much rounded; the lateral feathers about half an inch shorter. Fourth quill longest; first about as long as fifth. Bill large, stout; half as high, or more than half as high as long. *Male:* General color uniform lustrous velvet black with a greenish reflection. Shoulders and lesser wing coverts of a bright crimson or vermilion red. Middle coverts brownish yellow, or buff, and usually paler toward the tips. *Female:* Brown above, the feathers edged or streaked with rufous brown and yellowish; beneath white, streaked

with brown. Fore part of throat, superciliary and median stripe strongly tinged with brownish yellow. There is some variation in the shade of red on the shoulders, which is sometimes the color of arterial blood, or bright crimson. It never, however, has the hæmatitic tint of the red in a *A. tricolor*. The middle coverts are usually uniformly brownish yellow to the very tips; sometimes some of these middle coverts are tipped at the end with black, but these black tips are usually of slight extent, and indicate immaturity, or else a transition of hybridism or race to *A. gubernator*."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	9.25	15.00	4.90	3.75	1.12	.90
Female . . .	7.80	12.50	3.90	3.00	1.05	.75

Iris dark brown; bill dark brown to black; legs, feet and claws black.

This common species frequents the prairies, low meadows and marshy grass lands, preferring grounds dotted over with low, scattering bushes. During the fall and winter months they assemble in large flocks, and do much damage in the rice fields, and are often more or less injurious to the grains within their summer homes; but the damage they do in the latter case is overbalanced by the destruction of injurious insects, upon which they almost wholly feed during the breeding season; busy hunters of the field and followers of the plow. It is only within their winter quarters that I am unable to find sufficient plea for their protection.

The birds arrive from the south early in the spring, and scatter about in small flocks; the males arrive about a week in advance, and make their presence known from early morn till late at eve, by their peculiar squeaky song, "Kauk-quer-reé." Their courtships are short, the birds mating soon after the arrival of the females.

Their nests are placed in low bushes and occasionally in tussocks of grass, on wet, marshy grounds; a rather compact basket-like nest, composed of coarse grasses, weeds, and in some cases bits of rushes, fastened to and around the branches upon and against which it rests, and lined with fine grasses. Eggs four or five, .97x.70; light blue, with thick, zigzag markings of light and dark purple and blackish brown around larger end, and a few spots of the same colors scattered over the egg; in form, oval.

GENUS **STURNELLA** VIEILLLOT.

"Body thick, stout; legs large, toes reaching beyond the tail. Tail short, even, with narrow acuminate feathers. Bill slender, elongated; length about three times the height; commissure straight from the basal angle. Culmen flattened basally, extending backwards and parting the frontal feathers; longer than the head, but shorter than tarsus. Nostrils linear, covered by an incumbent membranous scale. Inner lateral toe longer than the outer, but not reaching to basal joint of middle; hind toe a little shorter than the middle, which is equal to the tarsus. Hind claw nearly twice as long as the middle. Feathers of head stiffened and bristly; the shafts of those above extended into a black seta. Tertials nearly equal to the primaries. Feathers above all transversely banded. Beneath yellow, with a black pectoral crescent."

***Sturnella magna* (LINN.).**

MEADOWLARK.

PLATE XXV.

Resident; abundant in the eastern and middle portion of the State; rare in the western. Begin laying early in May.

B. 406. R. 263. C. 320. G. 133. 193. U. 501.

HABITAT. Eastern North America; north to Nova Scotia and Canada; west to the edge of the Great Plains. Breeds throughout its range.

SP. CHAR. "The feathers above dark brown, margined with brownish white, and with a terminal blotch of pale reddish brown. Exposed portion of the wings and tail with dark brown bars, which on the middle tail feathers are confluent along the shaft. Beneath yellow, with a black, pectoral crescent, the yellow not extending on the side of the maxilla; sides, crissum and tibia pale reddish brown, streaked with blackish. A light median and superciliary stripe, the latter yellow anterior to the eye; a black line behind. Female smaller and duller. Young with pectoral crescent replaced by streaks; the yellow of under surface replaced more or less by ochraceous or pale fulvous."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.25	15.50	4.70	3.50	1.45	1.25
Female . . .	9.50	14.25	4.20	3.00	1.35	1.20

Iris brown; bill reddish to olive brown, with basal half of under pale bluish; legs light bluish flesh color; feet, especially the joints, darker; claws brown.

These well-known, plump, pretty birds inhabit the prairies and open grass lands, where, during the summer months, they feed almost exclusively upon beetles, grasshoppers, etc., and in winter upon the fallen seeds and grains, often visiting the cattle yards; harmless, beautiful birds, in no sense injurious, and there-

fore general favorites. They are very hardy, wintering from the Middle States southward, and the earliest of our spring songsters. Mounted upon a fence post, bush or knoll, they repeat at intervals their whistling notes, not varied but pleasing, and expressive of tenderness and joy. Their flights are rather laborious, an alternate changing from a rapid vibration of the wings to sailing; terrestrial birds, that, during the breeding season, remain in pairs, but are afterwards usually met with in small flocks or family groups.

Their nests are placed on the ground, in a thick tuft of grass, composed of grasses, which are often interwoven so as to form a cover overhead. Eggs four to six, 1.10x.80; white, finely spotted with lilac and reddish brown; in form, oval.

***Sturnella magna neglecta* (AUD.).**

WESTERN MEADOWLARK.

PLATE XXV.

Resident; common in the western and middle portions of the State; rare in the eastern. Begin laying about the middle of May.

B. 407. R. 264. C. 322. G. 134. 194. U. 501b.

HABITAT. Western North America, from Nebraska and Texas (casually Wisconsin and Illinois) west to the Pacific coast; north to British Columbia and Manitoba; south through western Mexico.

SP. CHAR. "Feathers above dark brown, margined with brownish white, with a terminal blotch of pale reddish brown; exposed portion of wings and tail with transverse bands, which in the latter are completely isolated from each other, narrow and linear; beneath yellow, with a black pectoral crescent. The yellow of the throat extending on the sides of the maxilla; sides, crissum and tibia very pale reddish brown, or nearly white, streaked with blackish; head with a light median and superciliary stripe, the latter yellow in front of the eye; a blackish line behind it; the transverse bars on the feathers above (less so on the tail) with a tendency to become confluent near the exterior margin."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.25	16.00	4.80	3.50	1.50	1.30
Female . . .	9.50	14.50	4.30	3.00	1.40	1.20

Iris brown; bill dark olive brown, with edges of upper and base of lower pale bluish; legs and feet bluish flesh color, joints darker; claws brown.

This western form is similar in habits and actions to the eastern bird, and differs so slightly in markings and color that were it not for its widely different song—rather bugle-like—it would have a doubtful standing as a race. It is thought by some writers to be less suspicious and more at home about our dwellings; this I account for on the ground that they are seldom disturbed or shot at, as is too often the case in the Eastern States.

Nesting habits, color and form of the eggs the same. A set of four eggs, collected April 26th, 1877, at Santa Cruz, California, measure: 1.08x.78, 1.08x.79, 1.08x.80, 1.09x.81.

GENUS *ICTERUS* BRISSON.

"Bill slender, elongated, as long as the head, generally a little decurved and very acute; tarsi not longer than the middle toe, nor than the head; claws short, much curved; outer lateral toe a little longer than the inner, reaching a little beyond base of middle toe; feet adapted for perching; tail rounded or graduated. Prevailing colors yellow or orange and black."

SUBGENUS *PENDULINUS* VIEILLOT.

Not tenable, there being a gradual transition through intermediate forms between the type and the typical species of *Icterus*. (*Ridgway*.)

Icterus spurius (LINN.).

ORCHARD ORIOLE.

PLATE XXV.

Summer resident; abundant. Arrive the last of April to first of May; begin laying the last of May; return the last of August to middle of September.

B. 414. R. 270. C. 324. G. 135, 195. U. 506.

HABITAT. Eastern United States; west to the base of the Rocky Mountains; south in winter to Panama.

SP. CHAR. *Adult male*: Head, neck, middle of chest, back, scapulars, wings (except middle and lesser coverts) and tail deep black, the greater wing coverts, quills and secondaries edged more or less distinctly with pale chestnut or whitish; rest of plumage uniform rich dark chestnut or bay, deepest on breast. *Adult female*: Upper parts yellowish olive, much duller and grayer on back and scapulars; wings grayish dusky, with two white bands, all the feathers with paler brownish gray edgings, tail yellowish olive, like rump, etc.; lower parts entirely light olive yellow. *Young male, second year*: Similar to adult male, but lores, chin and throat black—(the chestnut and rest of the black appearing in patches, increasing in extent during successive seasons.) *Young of year*:



PLATE XXVI.

1. MALE MORE OR LESS; 2. FEMALE MORE OR LESS; 3. MALE, 4. FEMALE, 5. RUSTY BLACKBIRD, MALE, 6. FEMALE, 7. BREWER'S BLACKBIRD, MALE, 8. FEMALE, 9. BRONZED GRACKLE, MALE, 10. FEMALE, 11. EVENING GRACKLE, MALE, 12. FEMALE, 13. PINE GROSBIRD, MALE, 14. FEMALE, 15. PURPLE FINCH, MALE, 16. FEMALE, 17. AMERICAN CROSSBILL, MALE, 18. FEMALE, 19. MEXICAN CROSSBILL, MALE, 20. FEMALE, 21. WHITE-WINGED CROSSBILL, MALE, 22. FEMALE.

Similar to adult female, but suffused with brownish, especially on upper parts. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.50	9.50	3.00	3.00	.75	.60
Female...	6.30	9.15	2.80	2.80	.75	.60

Iris dark brown; bill, upper black, under pale blue; legs, feet and claws bluish black.

This species is rarely met with in the northern United States, but is very common in the middle and southern portions. Its favorite resorts are along the prairie streams skirted with timber, and the groves and orchards about our dwellings; an active, restless bird, ever upon the move, flying and hopping about among the branches of trees, often swinging head downward in its search for insect life, upon which it almost wholly feeds during the early breeding season, singing as it flies, or from the perch uttering its hurried but pleasing song, which is occasionally heard in autumn.

Their nests are suspended from twigs, at the end of branches of small trees, along the banks of streams and in orchards and gardens; a beautiful, hemispherical nest, made wholly of a long, slender, wire-like grass, and occasionally bits of a cottony substance, neatly and ingeniously woven together and around the leaf-like twigs that support it. Eggs four or five, .85x.60; pale bluish white, thinly marked with specks and zigzag lines of light to reddish brown and lilac, thickest about larger end; in form, oval.

SUBGENUS YPHANTES VIEILLOT.

Depth of bill at base equal to half the length of the exposed culmen. (*Ridgway.*)

Icterus galbula (LINN.).

BALTIMORE ORIOLE.

PLATE XXVI.

Summer resident; common. Arrive the last of April to first of May; begin laying the last of May; return the last of August to middle of September.

B. 415. R. 271. C. 326. G. 136, 196. U. 507.

HABITAT. Eastern North America; north to New Brunswick and Manitoba, west to the base of the Rocky Mountains; south in winter to Panama.

SP. CHAR. Head, neck, middle line of chest, back, scapulars, wings (except lesser and middle coverts) and greater part of tail black; broad tips to greater wing coverts, and narrow edgings to some of the quills and secondaries (these sometimes worn away), white; rest of plumage, including lesser and middle wing coverts, base and tip of tail (except middle feathers, but on outer feathers occupying nearly half their total length), rich cadmium orange, sometimes varying to intense orange red, very rarely to lemon yellow. *Adult female*: Very variable in color, but usually (?) with upper parts olive, indistinctly streaked or spotted with black, the wings dusky, with two white bands, and light grayish edges to most of the feathers; rump dull ochraceous orange; tail duller, more olivaceous, orange; lower parts dull orange, paler on flanks, the throat usually with more or less admixture of black.* *Young of year*: Similar to adult female, as described above, but colors softer and more blended, and upper parts suffused with brownish. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.75	12.00	3.75	3.20	.90	.70
Female . . .	7.50	11.50	3.55	3.00	.90	.70

Iris dark brown; bill, ridge black, rest light blue; legs, feet and claws dark blue.

This familiar Oriole is very similar in habits to the Orchard, but is less lively in actions, and ranges much farther north. The males arrive in the spring at least a week ahead of the females, and their brilliant plumage and varied mellow whistling song insure them a welcome. The females also occasionally warble a few low, pleasing notes. They are very beneficial in their destruction of caterpillars and other injurious worms and insects, upon which they almost wholly subsist, occasionally plucking for a dessert a berry from a bush or a pea from the pod; but never claim a hundredth part of the share to which they are rightfully entitled.

Their nests are suspended from the extremities of branches (the elm appears to be the favorite tree), fifteen to forty feet from the ground; a compact, strongly-woven, deep, purse-like structure, composed of and attached to the twigs from which it hangs, with flax-like strippings from plants and vines, and lined with hair-like stems of grasses; when in the vicinity of dwellings, twine and thread are used largely in its make-up. Eggs

*The adult female often has the black pattern of head, neck and back as in male, but the color much duller and less uniform. The young male also varies between the two extremes (adult male and female) as described above, and cannot in any stage be with certainty distinguished from the adult female, except by dissection.

four or five, .92x.60; pale bluish white, with a rosy hue when fresh, marked with long, waving lines and spots of purple and blackish brown, chiefly at larger end; in form, oval to ovate.

Icterus bullocki (SWAINS.).

BULLOCK'S ORIOLE.

PLATE XXVI.

Prof. W. W. Cook, in his "Report on Bird Migration in the Mississippi Valley," says: "It is common in western Kansas, passing eastward even to Manhattan, where in 1883 the first was seen May 5." I have never met with the birds in the State, and think their occurrence very rare.

B. 146. R. 272. C. 327. G. 137, 197. U. 508.

HABITAT. Western United States; east to Dakota and Texas; south in winter to central Mexico.

SP. CHAR. "Tail very slightly graduated. Upper part of the head and neck, back, wings, two central tail feathers, line from base of bill through the eye to the back of the nape, and a line from the base of the bill running to a point on the throat, black. Under parts generally, sides of head and neck, forehead and line over the eye, rest of tail feathers, rump and upper tail coverts, yellow orange. A broad band on the wings, involving the greater and middle coverts, and the outer edge of the quills, white. Young male with the black replaced by greenish yellow, that on the throat persistent; female without this. The first plumage of the young differs from that of Baltimore in being more whitish beneath; lighter olive above, and without dark spots on back; white of middle and greater coverts connected by white edges of the latter."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.90	12.25	4.10	3.55	.90	.70
Female	7.50	11.50	3.80	3.10	.85	.70

Iris dark brown; bill, upper black, with edges and under mandible light blue; legs, feet and claws plumbeous.

This beautiful western species is a counterpart in form, habits and actions, of its eastern cousin the Baltimore. I have met with it in Colorado, New Mexico, Arizona, Washington, Southern California, and at Culiacan, Mexico, but nowhere in abundance. The following extract is from a description of the birds by our eminent naturalist, Dr. Elliott Coues:

"All the Orioles are wonderful architects, weaving pensile nests of soft, pliable, fibrous substances, with a nicety and beauty

of finish that human art would vainly attempt to rival. These elegant fabrics are hung at the end of slender twigs, out of the reach of ordinary enemies, and, though they may swing with every breath of wind, this is but a cradle rocking for the callow young, and it is a rude blast indeed that endangers the safety of their leafy home.

“Little time passes after their arrival before the modestly attired females, rambling silently through the verdure, are singled out and attended each by her impetuous consort, who sings his choicest songs, and displays the prowess she admires most. His song is an elegant paraphrase of the Baltimore’s, with all its richness and variety, though an ear well skilled in distinguishing bird’s notes can readily detect a difference. Their courtship happily settled, the pair may be seen fluttering through the thicket they have chosen, in eager search for a building place; and when a suitable one is found, no time is lost in beginning to weave their future home. It is a great mistake to suppose that birds of the same species always build in the same way. Though their nests have a general resemblance in style of architecture, they differ greatly according to their situation, to the time the birds have before the nest must be used for the reception of the eggs, and often, we are tempted to think, according to the taste and skill of the builders. In their work of this sort, birds show a remarkable power of selection, as well as adapting themselves to circumstances; in proof of which we have only to examine the three beautiful specimens now lying before us. Each is differently constructed, and while all three evince wonderful powers of weaving, one of them in particular, is astonishingly ingenious, displaying the united accomplishments of weaving and basket making. Before proceeding we may premise that the idea of the nest is a sort of bag or purse, closely woven, of slender, pliant substances, like strips of fibrous bark, grasses, hair, twine, etc., open at the top and hung by its rim in the fork of a twig, or at the very end of a floating spray.

“The first nest was built in a pine tree; and if the reader will call to mind the stiff nature of the terminal branchlets, each bearing a thick bunch of long, straight, needle-like leaves,

he will see that the birds must have been put to their wits' end, though very likely he will not be able to guess how they made shift with such unpromising materials. They made up their minds to use the leaves themselves in the nest, and with this idea they commenced by bending down a dozen or twenty of the stiff, slender filaments, and tying their ends together at the bottom. If you have ever seen a basket maker at work, with his upright pieces already in place, but not yet fixed together with the circular ones, you will understand exactly what the birds had thus accomplished. They had a secure framework of nearly parallel and upright leaves naturally attached to the bough above, and tied together below by the bird's art. This skeleton of a nest was about nine inches long, and four across the top, running to a point below; and the subsequent weaving of the nest upon this basis was an easy matter to the birds. Though if one were to examine a piece of the fabric cut away from the nest, he could hardly believe that the thin yet tough and strong felting had not been made by some shoddy contractor for the supply of army clothing. Yet it was all designed in a bird's little brain, and executed with skillful bill and feet."

A set of four eggs, taken June 10th, 1875, at Camp Harney, Oregon, from a nest suspended in a willow tree, measure: .86x.67, .89x.66, .89x.70, .90x.63; pale bluish, with long irregular wavy lines, thickest around the larger end, and a few scattering specks and marks over the egg, of reddish to blackish brown; in form, oval to ovate.

GENUS **SCOLECOPHAGUS** SWAINSON.

"Bill shorter than the head, rather slender, the edges inflexed as in *Quiscalus*, which it otherwise greatly resembles; the commissure sinuated. Culmen rounded, but not flattened. Tarsi longer than the middle toe. Tail even or slightly rounded.

"The above characteristics will readily distinguish the genus from its allies. The form is much like that of *Agelaius*. The bill, however, is more attenuated, the culmen curved and slightly sinuated. The bend at the base of the commissure is shorter. The culmen is angular at the base posterior to the nostrils, instead of being much flattened, and does not extend so far behind."

Scolecophagus carolinus (MULL.).**RUSTY BLACKBIRD.**

PLATE XXVI.

Winter sojourner; quite common in the eastern part of the State. Arrive the last of October; leave in March.

B. 417. R. 273. C. 331. G. 138, 198. U. 509.

HABITAT. Eastern and northern North America; west to Behring's Sea and the Great Plains; breeding from the northern United States northward; south in winter to the Gulf coast.

SP. CHAR. "Bill slender; shorter than the head; about equal to the hind toe; its height not quite two-fifths the total length. Wing nearly an inch longer than the tail; second quill longest; first a little shorter than the fourth. Tail slightly graduated; the lateral feathers about a quarter of an inch shortest. General color black, with purple reflections; the wings, under tail coverts, and hinder part of the belly, glossed with green. In autumn the feathers largely edged with ferruginous or brownish, so as to change the appearance entirely. *Spring female:* Dull opaque plumbeous or ashy black; the wings and tail sometimes with a green luster. *Young:* Like the autumnal birds."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	9.25	14.50	4.70	4.00	1.24	.80
Female	8.60	13.60	4.30	3.50	1.22	.75

Iris yellow; bill, legs, feet and claws black.

This hardy species inhabits the low lands and marshy thickets. They mate early in the spring, and share alike in the duties of hatching and rearing the young. At the close of the breeding season they collect together in flocks. They are largely omnivorous in their food habits, preferring the various forms of insect life, snails, etc., that abound in the aquatic grasses; but during the winter months, when forced to feed largely upon grains and seeds, they frequent the cattle yards and corn fields, and farther south forage off the rice plantations. Their flights are rather direct, and sustained by regular strokes of the wings. Their call or alarm note sounds much like "Cheek-che-weeck." During the love season and occasionally in autumn the males indulge in a low and somewhat musical song.

Their nests are usually placed in bushes and low trees, occasionally upon the ground, and are composed of twigs, vines, weeds and grass, the latter mixed with mud, and usually lined with leaves and fine grasses. Eggs usually three to five (as high

as seven have been taken), 1.00 x .73; vary in ground color from a grayish to a light bluish green, spotted with various shades of brown, usually thickest around the larger end, but sometimes clouding the entire surface, so as to nearly conceal the ground color, over which are occasionally small, wavy lines of very dark brown; in form, oval to ovate.

Scolecophagus cyanocephalus (WAGL.).

BREWER'S BLACKBIRD.

PLATE XXVI.

An occasional resident in the western part of the State; during the fall and winter months quite common, visiting now and then the eastern portion. Begin laying the middle to last of May.

B. 418. R. 274. C. 332. G. 139, 199. U. 510.

HABITAT. Western North America; north to the Saskatchewan region; east to western Minnesota and Texas (occasionally to Illinois), etc.; south into Mexico.

SP. CHAR. "Bill stout, quiscaline, the commissure scarcely sinuated; shorter than the head and hind toe; the height nearly half length of culmen. Wing nearly an inch longer than the tail; the second quill longest; the first about equal to the third. Tail rounded and moderately graduated; the lateral feathers about .35 of an inch shorter. General color of male black, with lustrous green reflections everywhere except on the head and neck, which are glossed with purplish violet. *Female*: Much duller, of a light brownish anteriorly; a very faint superciliary stripe."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	9.75	16.00	5.00	4.25	1.22	.75
Female	9.20	15.30	4.70	4.00	1.22	.72

Iris of males light or creamy yellow, of females brown; bill, legs, feet and claws black.

This is one of the most abundant species in the West. Social, gregarious birds, breeding in small colonies, and foraging together over the cultivated fields, pastures and plains; indiscriminate eaters of insect life, seeds, etc., and are regular visitants of the slaughter houses, where, in company with the Ravens and Magpies, they fatten upon the offal.

They are graceful walkers and swift runners, and when startled rise with one accord, circle in a compact body and alight upon one of the nearest trees, or perching place, dropping

back one after the other, as soon as the fright is over, to continue their rambling search for food.

Their song is a mixture of guttural and whistling notes, not very loud or musical; but when the males sing together, as they usually do, the effect is rather pleasing. Their ordinary note is a rather sharp chirp.

They breed on the low, wet lands, or along the borders of streams, and build their nests as it suits them best, on the ground or in the forks of trees and bushes; usually a rather bulky structure, composed of sticks interlaid with grass, weeds and tracings of mud, and lined with fine rootlets and hairs. In Chama, New Mexico, I found a small flock nesting on the ground, beside a mountain rivulet, in grassy lands, dotted here and there with trees and bushes. The nests examined were all without a trace of mud, and were composed almost wholly of the grass about them. Eggs four to seven (usually four or five), 1.02x.74; they vary in size, density of color and shape; dull greenish white to gray, and clouded with specks and blotches (thickest about the larger end) of light to dark reddish brown, and occasionally with streaks of the same; in form, oval to ovate. A set of four eggs, taken May 28th, 1878, at Santa Cruz, California, measure: .99x.72, 1.00x.71, 1.01x.73, 1.02x.72.

GENUS **QUISCALUS** VIEILLLOT.

"Bill as long as the head, the culmen slightly curved, the gonys almost straight; the edges of the bill inflected and rounded; the commissure quite strongly sinuated. Outlines of tarsal scutella well defined on the sides; tail long, boat shaped, or capable of folding so that the two sides can almost be brought together upward, the feathers conspicuously and decidedly graduated, their inner webs longer than the outer."

SUBGENUS **QUISCALUS**.

"Tail not decidedly longer than wing (usually decidedly shorter); adult males with varied, rich metallic tints (the head and neck rich, silky steel blue violet or grassy green); adult females similar, but duller. (*Ridgway*.)

Quiscalus quiscula æneus (RIDGW.).

BRONZE GRACKLE.

PLATE XXVI.

An occasional resident; abundant in summer. Begin laying about the middle of April.

B. —. R. 278*b*. C. 337. G. 140, 200. U. 511*b*.

HABITAT. Eastern North America; north from the gulf coast of Texas, Louisiana and northern Virginia to Nova Scotia, Hudson's Bay and the Saskatchewan region; west to the Rocky mountains; occasionally east of the Alleghanies.

SP. CHAR. "Third and fourth quills longest and equal; first shorter than fifth; projections of primaries beyond secondaries, 1.28; graduation of tail, 1.48. Metallic tints rich, deep and uniform. Head and neck all round rich, silky steel blue; this strictly confined to these portions, and abruptly defined behind, varying in shade from an intense Prussian blue to brassy greenish, the latter tint always, when present, most apparent on the neck, the head always more violaceous; lores velvety black. Entire body, above and below, uniform continuous metallic brassy olive, varying to burnished golden olivaceous bronze, becoming gradually uniform metallic purplish or reddish violet on wings and tail, the last more purplish; primaries violet black. The female is smaller and duller in color than the male."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	12.50	17.50	5.70	5.75	1.40	1.24
Female . . .	11.25	16.20	5.05	4.90	1.35	1.12

Iris yellow; bill, legs, feet and claws black.

This abundant species (generally known as the "Crow Black-bird") breeds throughout its range, but chiefly north of their southern winter quarters, arriving at their summer homes early in the spring. They are very social and strictly gregarious, preferring, even while mated, to live in communities. In their food habits omnivorous, but during the breeding season very beneficial in the destruction of caterpillars, moths, beetles, grasshoppers, insect life unearthed by the plow, etc., but for this service they claim too large a share at the harvest, especially of the corn, to be looked upon by the farmers as friends. I am, however, led to believe that in this respect they are far more beneficial than injurious, and were it not for their nest robbing habits, destroying in this way so many of our little friends, I should plead earnestly for their protection.

Their nests are saddled onto horizontal limbs, or in forks and in excavations in trees, along the streams and in the orchards and shade trees about our dwellings; a large and rather compact structure, composed of coarse grasses, weeds, blades of corn, or most any handy material, plastered together with mud

and lined with fine grasses, sometimes rootlets and hairs. Eggs four to six, 1.20x.83; light greenish white, irregularly spotted and marked with zigzag lines of rusty blackish brown, chiefly about larger end. They vary greatly in depth of color, marking, size and form.

FAMILY **FRINGILLIDÆ**. FINCHES, SPARROWS, ETC.

"Primaries nine. Bill very short, abruptly conical, and robust. Commissure strongly angulated at base of bill. Tarsi scutellate anteriorly, but the sides with two undivided plates meeting behind along the median line, as a sharp posterior ridge. Eyes hazel or brown, except in *Pipilo*, where they are reddish or yellowish. Nest and eggs very variable as to character and situation."

GENUS **COCCOTHAUSTES** BRISSON.

Width of bill at base decidedly less than its length, and basal outline of lower mandible underneath simply concave. Depth of bill at base greater than length of hind toe with claw, and more than three-fourths as long as tarsus. (*Ridgway*.)

SUBGENUS **HESPERIPHONA** BONAPARTE.

"Bill largest and stoutest of all the United States fringilline birds. Upper mandible much vaulted; culmen nearly straight, but arched toward the tip; commissure concave. Lower jaw very large, but not broader than the upper, nor extending back, as in *Guiraca*; considerably lower than the upper jaw. Gonys unusually long. Feet short; tarsus less than middle toe; lateral toes nearly equal, and reaching to the base of the middle claw. Claws much curved, stout, and compressed. Wings very long and pointed, reaching beyond the middle of the tail. Primaries much longer than the nearly equal secondaries and tertials; outer two quills longest; the others rapidly graduated. Tail slightly forked; scarcely more than two-thirds the length of the wings, its coverts covering nearly three-fourths of its extent."

Coccothraustes vespertina (Coop.).

EVENING GROSBEAK.

PLATE XXVI.

Winter visitant; rare.

B. 303. R. 165. C. 189. G. 83. 201. U. 514.

HABITAT. Western North America; north to British Columbia and the Saskatchewan; east to Manitoba, Michigan and Illinois; casually to Ontario, Ohio and Kentucky; south in Mexico to the highlands of Vera Cruz.

SP. CHAR. "Anterior half of the body dusky yellowish olive, shading into yellow to the rump above and the under tail coverts below. Outer scapulars, a broad frontal band continued on each side over the eye, axillaries and middle

of under wing coverts yellow. Feathers along the extreme base of the bill, the crown, tibia, wings, upper tail coverts and tail black; inner greater wing coverts and tertiaries white. The female differs in having the head of a dull olivaceous brown, which color also glosses the back. The yellow of the rump and other parts is replaced by a yellowish ash. The upper tail coverts are spotted with white. The white of the wing is much restricted. There is an obscure blackish line on each side of the chin."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.70	13.75	4.55	2.75	.78	.75
Female . . .	7.50	13.00	4.30	2.60	.78	.70

Iris brown; bill pale yellowish green, with an occasional rosy hue; legs light brown to dull flesh color; feet a shade darker; claws dark brown.

This handsome species of the wooded lands and openings can hardly be classed with the regular migratory birds, as they are found wintering in their northern homes, and, by Mr. Swinburn, breeding in Arizona; but rather a hardy, roving bird, and where known to be a resident, irregular in their habits, here in large numbers to-day, and to-morrow perhaps in another locality, to which food or the spirit moves them. Gregarious, social, unsuspicious, noisy birds, that make their presence known by their loud call note, uttered almost continually. The males have a short, and not very pleasing, warbling song. Their food consists chiefly of the pine, cedar, etc., berries, buds and tender leaves. As familiar and noticeable as these birds are, the following from "Nests and Eggs of North American Birds," by Davie, is the only knowledge we have of their nesting habits:

June 5th, 1884, Mr. John Swinburn found a nest of the Evening Grosbeak in a thickly wooded cañon, about fifteen miles west of Springerville, Apache county, Arizona. The nest was placed about fifteen feet from the ground, in the top of a small willow bush, on the border of a stream. It was a comparatively slight structure, rather flat, and composed of small sticks and roots, lined with finer portions of the latter. This nest contained three fresh eggs, of a clear greenish ground color, blotched with pale brown.

May 10th, 1886, Mr. E. H. Fiske—reported by Mr. Walter E. Bryant—found a nest in Yolo county, California. It was

built in a small live oak tree, about ten feet from the ground, and composed of small twigs supporting a thin layer of fibrous bark, and a lining of horse hair. The eggs, four in number, were too far advanced in incubation to be preserved. In general shape, color and markings similar to the eggs of the Black-headed Grosbeak, but he thinks a little larger in size. And Dr. Merrill observed the birds in Washington Territory, carrying material for a nest into a huge fir tree, but was unable to locate the nest, as the tree was practicably inaccessible.

GENUS **PINICOLA** VIEILLOT.

"Bill short, nearly as high as long; upper outline much curved from the base; the margins of the mandibles rounded; the commissure gently concave, and abruptly deflexed at the tip; base of the upper mandible much concealed by the bristly feathers covering the basal third. Tarsus rather shorter than the middle toe; lateral toes short, but their long claws reach the base of the middle one, which is longer than the hind claw. Wings moderate; the first quill rather shorter than the second, third and fourth. Tail rather shorter than the wings; nearly even."

Pinicola enucleator (LINN.).

PINE GROSBKAK.

PLATE XXVI

A rare winter visitant.

B. 304. R. 166. C. 190. G. 84, 202. U. 515.

HABITAT. Northern portion of the northern hemisphere; south in North America to the northern United States, and in the Rocky Mountains and Sierra Nevada regions to California and Colorado; casually to Kansas, Kentucky, etc.

Professor Ridgway, in his "Manual of North American Birds," enters this bird as variety *canadensis*, and confines the species to northern Europe and Asia. I have never had an opportunity to compare specimens, but, from my knowledge of the man, feel confident that the conclusions reached were based on a large series of specimens, and that his action will be sustained by the council of the A. O. U. In the meantime, however, it must stand as entered.

SP. CHAR. "*Male*: General color light carmine red or rose, not continuous above, however, except on the head; the feathers showing brownish centers on the back, where, too, the red is darker. Loral region, base of lower jaw all round, sides (under the wings), abdomen and posterior part of the body, with

under tail coverts, ashy, whitest behind. Wings with two white bands across the tips of the greater and middle coverts; the outer edge of the quills also white, broadest on the tertiaries, on secondaries tinged with red. *Female*: Ashy, brownish above, tinged with greenish yellow beneath; top of head, rump and upper tail coverts brownish gamboge yellow. Wings much as in the male. Young like female, but more ashy."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	9.00	14.00	4.60	4.00	.88	.55
Female . . .	8.75	13.70	4.50	3.80	.88	.55

The birds vary in size; in some specimens examined the females were fully as large as the males.

Iris dark brown; bill, legs, feet and claws black.

This extremely northern species inhabits the wooded lands, the pine tree—as its name indicates—being the favorite. The birds feed during the late fall and winter months almost exclusively upon coniferous seeds, in the spring upon the tender buds and blossoms of deciduous trees, insects, etc., and for a dessert berries in their season. I have met with the birds twice in the mountains of Colorado, and in February and March of 1880, at Digby, Nova Scotia, saw several small flocks several times. They were quite tame, and mating; the males singing from the topmost limbs, or, rather, repeating a loud, but soft, clear whistling note, and occasionally a few low, pleasing, twittering notes. Very little is known in regard to their nesting habits. Dr. Coues found them breeding in Labrador; and Mr. G. A. Boardman describes a nest with two eggs, taken near Calais, Maine, which he thinks belongs to this bird, but he failed to see the parent birds. In the Smithsonian Institute are young birds taken in the Rocky Mountains of Colorado. From this it would appear that Colorado, Labrador, and probably northern New England, are the extreme southern limits of their breeding grounds, south of which they are only occasional winter visitors.

Ridgway says: "Their nest is a rather flat, thin structure of fine rootlets, etc., in coniferous trees. Eggs, 1.01x.74; deep greenish blue, or bluish green, rather sparingly spotted with dark brown and black."

GENUS **CARPODACUS** KAUP.

"Bill short, stout, vaulted; the culmen decurved towards the end; the commissure nearly straight to the slightly decurved end. A slight development of bristly feathers along the sides of the bill, concealing the nostrils. Tarsus shorter than the middle toe; lateral claws reaching to the base of the middle one. Claw of hind toe much curved, smaller than the middle one, and rather less than the digital portion. Wings long and pointed, reaching to the middle of the tail, which is considerably shorter than the wing, and moderately forked. Colors red, or red and brown. Female with the red replaced by brown."

Carpodacus purpureus (GMEL.).

PURPLE FINCH.

PLATE XXVI.

A rare winter sojourner; during migration, not uncommon in the eastern portion of the State. Leave in March; a few occasionally linger until the first of April; begin to return in September.

B. 305. R. 168. C. 194. G. 85, 203. U. 517.

HABITAT. Eastern North America; north to Labrador and the Saskatchewan; west to the high plains; wintering in the Southern States; breeding from about latitude 40° northward.

SP. CHAR. "Second quill longest; first shorter than third, considerably longer than the fourth. Body crimson, palest on the rump and breast, darkest across the middle of back and wing coverts, where the feathers have dusky centers. The red extends below continuously to the lower part of the breast, and in spots to the tibia. The belly and under tail coverts white, streaked faintly with brown, except in the very middle. Edges of wings and tail feathers brownish red; lesser coverts like the back; two reddish bands across the wings (over the ends of the middle and greater coverts). Lores dull grayish. *Female*: Olivaceous brown above, brighter on the rump. Beneath white; all the feathers everywhere streaked with brown, except on the middle of the belly and under coverts. A superciliary light stripe."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.25	10.20	3.35	2.40	.65	.46
Female . . .	6.00	9.70	3.10	2.20	.65	.46

Iris dark brown; bill dark brown above, a shade paler beneath, with a faint bluish tint; legs and feet brown; claws blackish.

These birds are very social and unsuspicious in their habits, frequenting the orchards and groves about the dwelling houses; the evergreen trees seem to be their favorites. They feed upon seeds, berries, insects, etc., and in the early spring largely upon

buds and blossoms, and for this injurious habit are much dreaded by fruit growers. Were it not for this, their gentle ways and rich musical, warbling song would insure them a hearty welcome. As they are quite constant singers and easily tamed, they are much sought after for cage birds.

They usually move about in small flocks, flying in a rather compact form and with an undulating motion, as they go from tree to tree in search of food, where at the ends of the slender branches they sway about, often hanging head downward, like the Titmice, as they pluck the buds and berries, or seeds from the cones.

Their nests are usually placed in evergreen trees, sometimes in orchard trees. They are composed of weeds, strippings from plants, rootlets, grasses, etc., and lined with hairs. Eggs usually four or five; they vary greatly in size; dull greenish blue, irregularly specked and spotted — chiefly about the larger end — with black, umber and lilac, the black markings occasionally in short lines; in form, oval. A set of four eggs, taken May 30th, 1879, at Eastport, Connecticut, from a Norway spruce, and about twelve feet from the ground, are, in dimensions: .70 x .53, .74 x .54, .76 x .54, .77 x .54.

GENUS **LOXIA** LINNÆUS.

“Mandibles much elongated, compressed and attenuated; greatly curved or falcate, the points crossing or overlapping to a greater or less degree. Tarsi very short; claws all very long, the lateral extending beyond the middle of the central; hind claw longer than its digit. Wings very long and pointed, reaching beyond the middle of the narrow, forked tail. Colors reddish in the male.”

Loxia curvirostra minor (BREHM.).

AMERICAN CROSSBILL.

PLATE XXVI.

Irregular winter visitant; rare.

B. 318. R. 172. C. 199. G. 86, 204. U. 521.

HABITAT. North America in general, but chiefly far northward and east of the Great Plains; breeding sporadically south to Maryland and Virginia, near the coast, and to northern Georgia, Tennessee and Kentucky, in mountains. (*Ridgway.*)

SP. CHAR. “*Old male:* Dull red (the shade differing in the specimens, sometimes brick red, sometimes vermilion, etc.); darkest across the back; wings

and tail darkish brown. Young male yellowish. *Female*: Dull greenish olive above, each feather with a dusky center; rump and crown bright greenish yellow. Beneath grayish; tinged (especially on the sides of the body) with greenish yellow. *Young*: Olive above; whitish beneath, conspicuously streaked above and below with blackish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.10	10.25	3.40	2.35	.65	.62
Female . . .	5.90	10.00	3.30	2.17	.63	.60

Iris, bill, legs, feet and claws dark brown, the bill with a bluish hue.

These social, gregarious birds inhabit the coniferous forests, feeding chiefly upon the seeds extracted from the cones. When far away from their natural haunts, seldom stop, even to rest, except in the vicinity of scattering cedars to be met with on the rocky bluffs and banks of our prairie streams, or where evergreen trees have been planted to beautify and shade the dwelling grounds, parks, etc. As soon as such trees mature and are in numbers to furnish a sufficient supply of food, I am confident the birds will become winter sojourners, but not common, as will be the case with the Mexican variety, which I predict will become an occasional resident.

They are noisy birds, that often utter their sharp call note, and chatter in their undulating flights. The males have a varied and somewhat pleasing song, that I have often heard in the depth of winter in their northern homes. They are peculiar in their structure, and in actions much like the Parrot family, using their bills in climbing about among the branches, swinging at the extremity of limbs, usually hanging head downward while extracting seeds from the cones, and while eating often hold their food in the claws of one foot. Wilson says:

"On first glancing at the bill of this extraordinary bird, one is apt to pronounce it deformed and monstrous; but on attentively observing the use to which it is applied by the owner, and the dexterity with which he detaches the seeds of the pine tree from the cone, and from the husks that enclose them, we are obliged to confess on this, as on many other occasions, where we have judged too hastily of the operations of nature: that no other conformation could have been so excellently adapted to the purpose."

The birds, as a rule, nest early; often before the snow is off the ground. Mr. Eugene P. Bicknell, in "Bulletin of the Nuttall Ornithological Club," gives the following minute description of a nest with three eggs, taken April 30th, 1875, at Riverdale, New York city:

"The nest was placed in a tapering cedar of rather scanty foliage, about eighteen feet from the ground, and was without any single main support, being built in a mass of small, tangled twigs, from which it was with difficulty detached. The situation could scarcely have been more conspicuous, being close to the intersection of several roads (all of them more or less bordered with ornamental evergreens), in plain sight of as many residences, and constantly exposed to the view of passers by. The materials of its composition were of rather a miscellaneous character, becoming finer and more select from without inwards. An exterior of spruce twigs, loosely arranged, surrounded a mass of matted shreds of cedar bark, which formed the principal body of the structure, a few strips of the same appearing around the upper border, the whole succeeded on the inside by a sort of felting of finer material, which received the scanty lining of black horse hair, fine rootlets, grass stems, pieces of string and two or three feathers. This shallow felting of the inner nest can apparently be removed intact from the body of the structure, which, besides the above-mentioned materials, contained small pieces of moss, leaves, grass, string, cottony substances and the green foliage of cedar. The nest measured internally two and one-half inches in diameter by over one and a quarter in depth; being in diameter externally about four inches, and rather shallow in appearance.

"The fresh eggs are in ground color of a decided greenish tint, almost immaculate on the smaller end, but on the opposite side with irregular spots and dottings of lavender brown of slightly varying shades, interspersed with a few heavy surface spots of dark purple brown. There is no approach in the arrangement of these to a circle, but between the apex of the larger end and the greatest diameter of the egg is a fine, hair-like surface line; in two examples it forms a complete though

irregular circle, and encloses the principal spots. In the other egg, which is the largest, this line is not quite complete and the primary blotches are wanting, but the secondary markings are correspondingly larger and more numerous. In another egg there are two perfect figures of 3 formed on the sides by the secondary marks, one of them large and singularly symmetrical. The eggs measure respectively: .74x.56, .75x.58, .78x.59."

***Loxia curvirostra stricklandi* RIDGW.**

MEXICAN CROSSBILL.

PLATE XXVI.

Winter sojourner; not uncommon in the parks, etc., where the transplanted evergreen trees are growing. Prof. L. L. Dyche, curator of birds and mammals at the State University, was the first to report the discovery of the birds in the State—at Lawrence, November 13th, 1885. They have since been met with in the same vicinity, at Emporia, Baldwin and Manhattan, wintering on the Agricultural College grounds at the latter place. Prof. E. A. Popenoe reports seeing a male at Wallace in the month of July.

B. 318*a*. R. 172*a*, C. 200. G. —, 205. U. 521*a*.

HABITAT. Southwestern United States, from eastern Kansas, Colorado, New Mexico and Arizona, south through the highlands of Mexico.

SP. CHAR. "Colors of *L. curvirostra minor*, but red brighter, more scarlet. Bill very large, the lower mandible nearly or quite equal to the upper in strength and length."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.75	11.75	3.75	2.55	.70	.78
Female	6.50	10.25	3.50	2.40	.65	.76

Iris dark brown; bill dusky; legs and feet dark brown; claws blackish.

The birds are similar in their habits and actions to the American. I have never seen their nests or eggs, nor a description of the same, but feel safe in presuming that they are not noticeably different.

The last of June, 1885, while in the Glorieta Mountains, of New Mexico, I met with several small flocks, composed of young

and old. The young birds were fully grown but were clamorous for food.

***Loxia leucoptera* GMEL.**

WHITE-WINGED CROSSBILL.

PLATE XXVI.

Irregular winter visitant; very rare.

B. 319. R. 173. C. 198. G. 87, 206. U. 522.

HABITAT. Northern North America; breeding from northern New England and the Rocky Mountain regions of Colorado northward; south in winter to about latitude 39°.

SP. CHAR. Wing with two white bands (on tips of middle and greater coverts), the two confluent at upper portion. *Adult male:* General color purplish red or dull rosy, occasionally tinged with yellow or orange; scapulars, wings and tail deep black, the former varied with white, as described above; back clouded with blackish. *Adult female:* Olive greenish or grayish above; paler (often more yellowish) beneath; wings and tail as in male, but duller black. *Young:* Pale olivaceous, more dingy whitish, tinged with yellowish, beneath, everywhere streaked with dusky; wings and tail much as in adults. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.25	10.50	3.50	2.45	.60	.61
Female . . .	6.10	10.15	3.35	2.40	.60	.61

Iris brown; bill dusky; legs and feet dark brown; claws black.

The natural home of this handsome species is within the deep evergreen woods, but outside of the breeding season they are erratic wanderers, roving about in small flocks, in an irregular and apparently aimless manner. In their general habits, are similar to the American Crossbill, but rather more northerly in their distribution. Their food consists largely of seeds extracted from cones, the spruce the favorite; they also feed freely upon various kinds of seeds, berries, buds, etc.

They are naturally unsuspicious, take kindly to confinement, and make interesting cage birds; and climb about over the cage with the aid of their bills, much like Parrots. Their flights are undulating and rather swift. While feeding and moving about, are quite noisy, keeping up an almost constant, plaintive "Wheep," or cheeping note.

Their song is low, soft and sweet, much like that of the American Goldfinch. In the early part of July, I found the birds

quite common on the Magdalen Islands, especially on Bryon Isle. Young birds were fully grown, and capable of taking care of themselves. I think they must have been hatched in the early spring, not later than the first of May. Young birds have often been met with; very little, however, is known in regard to their nesting habits. They are said by some writers to lay five eggs, but the only reliable description I can find is the following by Doctor Brewer, in "North American Land Birds:"

"A nest of this species (S. I. 13,452), taken at Fredricton, New Brunswick, by Dr. A. Adams, in 1868, is deeply saucer-shaped, and composed of a rather thin wall of fibrous pale green lichens, encased on the outside with spruce twigs, and thinly lined with coarse hairs and fine shreds of inner bark. Its external diameter is a little less than four inches, the rim being almost perfectly circular; the cavity is an inch and a half deep by two and a half broad.

The one egg is pale blue, the large end rather thickly spattered with fine dots of black and ashy lilac; is regularly or rather slightly elongated oval, the smaller end rather obtuse. It measures .80 of an inch in length by .56 in breadth.

GENUS **ACANTHIS** BECHSTEIN.

"Bill very short, conical, acutely pointed, the outline sometimes concave; the commissure straight; the base of the upper mandible and the nostrils concealed by stiff, appressed, bristly feathers; middle of the mandible having several ridges parallel with the culmen. Inner lateral toe rather the longer, its claw reaching the middle of the middle claw; the hind toe rather longer, its claw longer than the digital portion. Wings very long, reaching the middle of the tail; second quill a little longer than the first and third. Tail deeply forked."

Acanthis linaria (LINN.).

REDPOLL.

PLATE XXVII.

A rare winter visitant.

In the early part of the winter, I think of 1861, I saw at Neosho Falls, in my brother's yard, a flock of at least twenty, feeding on a pile of manure from the horse stable. It was an extremely cold day and the ground covered with snow. I ran for the gun, but before I returned they were gone. In January,



PLATE XXVII.

1. REDPOLL; Male. 2. Female. 3. AMERICAN GOLDFINCH; Male. 4. Female. 5. PINE SISKIN; Male. 6. Female. 7. SNOWFLAKE; Male. 8. Female.
9. LAPLAND LONGSPUR; Male. 10. Female. 11. SMITH'S LONGSPUR; Male. 12. Female. 13. CHESTNUT-COLLARED LONGSPUR; Male. 14. Female.
15. McCOWN'S LONGSPUR; Male. 16. Female. 17. VESPER SPARROW; Male. 18. Female. 19. SAVANNA SPARROW; Male. 20. Female. 21. WESTERN SAVANNA SPARROW; Male. 22. GRASSHOPPER SPARROW; Male. 23. Female. 24. LECONTE'S SPARROW; Male. 25. Female. 26. NELSON'S SPARROW; Male.

1881, at Manhattan, Dr. C. P. Blachly shot one of the birds out of a small flock.

B. 320. R. 179. C. 207. G. 88. 207. U. 528.

HABITAT. Northern portion of the northern hemisphere (not observed in Greenland); in North America, south in winter through the northern to middle United States, and Colorado; casually to Washington, Kentucky, middle Missouri, and on the Pacific side to southeastern Oregon.

Spring and Winter Plumage.

SP. CHAR. "*Adult:* Ground color of the occiput, nape, scapulars and inter-scapulars brownish white, each feather with medial streak of dusky brown; rump and upper tail coverts white, with the streaks in sharp contrast; wings clear brownish dusky with two conspicuous white bands, formed by tips of middle and secondary coverts; tertials broadly and secondaries narrowly edged with white; tail feathers narrowly edged with white, this broader on inner webs. A narrow frontal band (tinged with brownish), an obscure superciliary stripe, and the lower parts in general, white; sides streaked with dusky, and lower tail coverts each with a medial streak of the same. On the forehead and vertex a somewhat quadrate patch of intense carmine. Nasal plumuli, lores, and a small (somewhat quadrate) gular spot, dark silky brown. *Male:* Throat, jugulum and breast rosaceous carmine (extending upward over the maxilla, and backward over the sides almost to the flanks); rump tinged with the same. *Female:* No red except on the crown, where its tint is less intense; dusky gular spot larger, extending farther on the throat."

Summer or Breeding Plumage.

"The pattern the same as above, but the dark tint intensified and spread so as to almost entirely obliterate any lighter markings, except the streaks on the rump; the wing bands as well as the dorsal streaks obsolete; streaks on the sides broader; frontal band dusky, like the occiput; red tints slightly intensified; bill wholly dusky. *Male:* Throat, jugulum, breast and tinge on sides and rump rosy carmine. *Female:* No red except on crown. *Young, first plumage:* Streaks covering whole head, neck and breast; no red."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.40	8.75	2.85	2.35	.55	.35
Female	5.00	8.55	2.75	2.30	.55	.33

Iris dark brown; bill straw yellow, with line of blackish along ridge and down the center of under to forks; legs, feet and claws dark brown to blackish.

The home of these hardy, social little birds is within the cold, icy regions of the north, and it is only in the winter months that we are favored with their visits, which are very irregular,

coming and going in flocks; winter sojourners in the northern States, but only visitants southward. Their gentle, fearless ways, rosy plumage and cheerful, twittering notes make them a general favorite. They are very unsuspicious, easily tamed, and make pretty cage birds. In my more northern home I was on the lookout for their arrival, and never failed to welcome them with a bountiful supply of food; and I have often had them pick up crumbs and seeds at my feet, and when startled by a sudden motion, would rise as of one accord, with clear, twittering, chattering notes, in a light, buoyant, circling course for a few moments, and then drop back at or near the starting point, and without hesitation hop about in a heedless manner, as if forgetful of the scare.

They feed upon the seeds of the various plants, small tender buds, etc. A happy family that never quarrel, and it is a pretty sight to watch them while feeding, especially as they sway about in various positions from weeds and small, flexible twigs of trees, that bend with their weight, showing off their rosy plumage to great advantage. The following description of their nesting habits is taken from Mr. E. W. Nelson's "Report upon Natural History Collections in Alaska:"

"This and the closely-allied species commence to nest in the vicinity of Saint Michael's even as early as May 22d, and in 1878, before the ground was free from snow, and while the sea and small streams were still covered with ice, we found a nest of this bird cunningly placed in a cavity in a stout branch projecting from a log of drift wood, which a high tide, many years before, had stranded on the bare tundra several miles from the sea. In the bottom of the shallow cavity, to which the bird gained access by a small knot hole, was placed a compact structure of fine straw and grass, lined with Ptarmigan feathers, and containing three eggs. The log was twenty to twenty-five feet in length, and while a native sat at the farther end the female entered the nest, the male keeping close by and continually uttering his cheerful notes, as if to assure his partner of his presence.

"A pair of these birds built their nest early the same season

within the shelter afforded by my inverted kyak, as it lay upon the staging close by the house, and nests were found all about in bushes or tufts of grass, indifferently, according to the locality. The material used by them is as varied as the sites chosen, and appears to consist of such material as comes first to hand. One, for instance, is composed entirely of an irregular mass of fine, dry twigs, with a very few Ptarmigan feathers for lining; another is a fine, compact, cup-shaped structure of dry, coarse grass, warmly lined with a finer material of the same, united with feathers and the cotton obtained from willows and other plants."

Eggs three to six (usually four or five), .68 x .48; pale bluish green, spotted with orange brown chiefly about the larger end, with occasionally a few streaks of a darker color—brown to black; in form, oval.

GENUS *SPINUS* KOCH.

"Bill rather acutely conic, the tip not very sharp; the culmen slightly convex at the tip; the commissure gently curved. Nostrils concealed. Obsolete ridges on the upper mandible. Tarsi shorter than the middle toe; outer toe rather the longer, reaching to the base of the middle one. Claw of the hind toe shorter than the digital portion. Wings and tail as in *Acanthis*. The colors are generally yellow, with black on the crown, throat, back, wings and tail varied sometimes with white. The females want the bright markings of the male. This genus differs from *Acanthis* in a less acute and more curved bill, a much less development of the bristly feathers at the base of the bill, the claw of the hind toe shorter than its digital portion, the claws shorter and less curved and attenuated, and the outer lateral toes not extending beyond the base of the middle claw."

Spinus tristis (LINN.).

AMERICAN GOLDFINCH.

PLATE XXVII.

Resident; abundant in winter; quite common in summer. Begin laying late in June to middle of July. They nest late, in order that the seeds upon which they chiefly raise their young may form and begin to mature by the time the little ones are hatched.

B. 313. R. 181. C. 213. G. 89, 208. U. 529.

HABITAT. Temperate North America generally.

SP. CHAR. "*Male*: Bright gamboge yellow; crown, wings and tail black. Lesser wing coverts, band across the end of greater ones, ends of secondaries

and tertiaries, inner margins of tail feathers, upper and under tail coverts, and tibia, white. *Female*: Yellowish gray above; greenish yellow below. No black on forehead. Wing and tail much as in the male. *Young*: Reddish olive above; fulvous yellow below; two broad bands across coverts, and broad edges to last half of secondaries, pale rufous.

"In winter the yellow is replaced by yellowish brown; the black of the crown wanting; that of wings and tail brown. The throat is generally yellowish; the under parts ashy brown, passing behind into white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.10	8.85	2.85	2.00	.50	.40
Female . . .	4.95	8.70	2.80	1.90	.50	.38

Iris dark brown; bill, terminal half of ridge dusky, rest straw color; legs and feet light brown; claws a shade darker.

These hardy, gregarious, social birds are largely residents within their northern homes, moving southward as the deep snow covers their main supply of food, rather than from choice or habit, nesting from southern California, southern Kansas and Kentucky, northward; south, I think only a winter sojourner, except, perhaps, in mountainous districts.

Their gentle ways, bright colors, sweet song, and undulating, chirruping flight readily attract attention, and assure them, as a rule, a welcome, though they are not always in good standing with the gardener, who objects to their taking at the harvest a small share of the ripened seeds. For this, they more than repay by the destruction of the seeds of the many weeds and injurious plants, upon which they largely feed throughout the winter months. The thistle is a favorite, and they are also very fond of the seeds from the cones of the hemlock, etc., and of the button balls of the sycamore trees. They are easily tamed, and their low, warbling song, that at times swells up quite loudly, much like the Canary, makes them a favorite cage bird.

Their nests are placed in the branches of trees and bushes, generally on apple or small elm trees, from six to twelve feet from the ground. They are constructed of and firmly attached to the limbs on which they rest, with fine hemp-like strippings from plants and bits of cottony substances, and lined with hairs, and now and then a feather. Eggs four to six, .65x.50; pale bluish white; when fresh and unblown, with a rosy hue; in form, oval.

Spinus pinus (WILS.).

PINE SISKIN.

PLATE XXVII.

Winter sojourner; not uncommon. Remain until late in the spring.

B. 317. R. 185. C. 212. G. 90, 209. U. 533.

HABITAT. Temperate North America, south in winter to the Gulf States and alpine regions of Vera Cruz.

SP. CHAR. "Tail deeply forked; above brownish olive; beneath whitish, every feather streaked distinctly with dusky; concealed bases of tail feathers and quills, together with their inner edges, sulphur yellow; outer edges of quills and tail feathers yellowish green; two brownish white bands on the wings. Sexes alike. *Young*: Similar, but the white below tinged with yellow, the upper parts with reddish brown, and there are two pale ochraceous bands on the wings."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.90	8.75	2.80	1.90	.55	.40
Female . . .	4.75	8.50	2.75	1.80	.55	.40

Iris dark brown; bill dusky, with basal half of under bluish, sometimes nearly black, with all of basal half bluish; legs, feet and claws dark brown.

These birds are very similar in habits and actions to the American Goldfinch, but rather more of a bird of the evergreen forests, a little swifter in flight, and their notes and song less loud, with a sharper, clearer ring.

I have met with the birds in various localities, usually in flocks of from twenty to thirty. In the early part of July, 1880. I had a good opportunity to observe their habits at the Magdalen Islands, in the Gulf of St. Lawrence. They were evidently nesting, as the males were actively singing from the bush and in their circling flights, but my limited time, and desire to secure certain specimens, prevented my making a search for their nests. On my return trip, I heard them singing at Percy Rock and at Gaspe.

They breed from the northern United States (much farther south in the Rocky Mountains) northward throughout the British possessions.

Nest in trees; usually a rather flat though compact structure of fine twigs, rootlets, hair fibers, etc., lined with fine rootlets

and hair. Eggs usually three or four, about .62x.50; pale greenish blue, speckled (chiefly around the larger end) with reddish brown; a few small black markings and lilac gray stains; in form, oval to rounded oval.

GENUS **PLECTROPHENAX** STEJNEGER.

Bill conical; the lower mandible higher than the upper; the sides of both mandibles guarded by a closely-applied brush of stiffened, bristly feathers directed forwards, and on the upper jaw concealing the nostrils; the outlines of the bill nearly straight or slightly curved; the lower jaw considerably broader at the base than the upper, and wider than the gonys is long. Tarsi considerably longer than the middle toe; the lateral toes nearly equal (the inner claw largest), and reaching to the base of the middle claw. The hinder claw very long, moderately curved and acute, considerably longer than its toe; the toe and claw together reaching to the middle of the middle claw or beyond its tip. Wings very long and much pointed, reaching nearly to the end of the tail; the first quill longest; the others rapidly graduated; the tertiaries a little longer than the secondaries. Tail moderate, about two-thirds as long as the wings; nearly even or slightly emarginated. (*Ridgway.*)

Plectrophenax nivalis (LINN.).

SNOWFLAKE.

PLATE XXVII.

Winter visitant; rare.

B. 325. R. 186. C. 219. G. 91, 210. U. 534.

HABITAT. Northern parts of the northern hemisphere; breeding in the Arctic regions; in North America, south in winter into the northern United States; casually to Georgia, southern Illinois and Kansas.

SP. CHAR. "*Male:* Colors, in spring plumage, entirely black and white. Middle of back between scapulars, terminal half of primaries and tertiaries and two innermost tail feathers black; elsewhere pure white. Legs black at all seasons. In winter dress, white beneath; the head and rump yellowish brown, as also some blotches on the sides of the breast; middle of back brown, streaked with black; white on wings and tail much more restricted. First quill longest. *Female:* In spring, continuous white beneath only; above, entirely streaked, the feathers having blackish centers and whitish edges; the black streaks predominate on the back and crown. *Young:* Light gray above, with obsolete dusky streaks on the back; throat and jugulum paler gray, the latter with obsolete streaks; rest of lower parts dull white. Wing coverts, secondaries and tail feathers broadly edged with light ochraceous brown."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.80	12.60	4.30	2.90	.90	.41
Female . . .	6.50	12.00	4.00	2.70	.90	.40

Iris dark brown; bill straw color, end (and extending up ridge of upper) black; legs, feet and claws black.

These birds are very common in the Arctic regions, as far north as explorations have been made. Hardy birds, that move southward as the snow covers their feeding grounds, evidently not from choice; for where the ground is bare and seeds plenty, they are lively and apparently happy with a temperature of 30° below zero. In their southern wanderings they assemble together in flocks that often contain hundreds. A very pretty sight, as their black and white markings flash in the air, as they sweep and whirl in a rather compact, wavy form, near the ground, high in air, alighting and rising almost in unison, uttering as they go soft, chirruping notes.

The birds breed in suitable localities in abundance throughout their northern homes. Mr. H. W. Elliott found them breeding on the Seal Islands, in the Behring Sea, and says:

“The bird builds an elegant and elaborate nest of soft, dry moss and grass, and lines it warmly with a thick bed of feathers. It is placed on the ground, beneath some heavy lava shelf or at the foot of an enormous boulder. Five eggs are usually laid, about the last of June. They are an inch long and two-thirds broad, of a grayish or greenish white, spotted sometimes all over, sometimes at or around the larger end only, with various shades of rich dark brown, purple brown, and paler neutral tints. Sometimes the whole surface is quite closely clouded with diffuse reddish brown markings. Upon the female the entire labor of the three weeks’ incubation required for the hatching of her brood devolves. During this period the male is assiduous in bringing food; and at frequent intervals sings his simple but sweet song, rising as he begins it high in the air, as the Skylark does, and, at the end of the strain, drops suddenly to the ground again. . . . The food of this species consists of the various seeds and insects peculiar to the rough, higher ground it frequents, being especially fond of the small coleopterous beetles found on the island.”

And Mr. John Murdock, in his “Report of the Expedition to Point Barrow, Alaska,” says:

“Stragglers continue to arrive through April and May, but they were not really plenty either season till about May 20th. They began to sing about the middle of May, and by the 23d, or 24th, were well established and in full song.

“Three or four pairs made their home near the station, and several more in the village, while the rest were scattered along the edge of the tundra, but few going any distance inland. They especially affected the broken, muddy banks and gullies below the village and along the shore of the lagoons, and the cook’s refuse heap was from the first a great attraction.

“The males spend a great deal of time singing, perched on the highest point they can find. The ridge poles of our buildings and the wind vane were favorite resorts for these jolly little singers. They continued singing until about the first week in July.

“Early in June they begin to build, in holes and crevices in the banks, where the nest is always completely concealed, raising, occasionally at any rate, two broods in a season. The full complement of eggs appears to be six, though I found one nest containing seven eggs, in 1883.”

A set of four eggs, collected June 15th, 1878, at Godthaab, Greenland, from a nest on the ground, made of fine grass and stems, measure: .81x.64, .82x.65, .85x.66, .87x.62; in form, oval.

GENUS **CALCARIUS** BECHSTEIN.

Bill small, the gonys very short, with its angle opposite the middle of the culmen; maxilla equal to or exceeding the mandible in depth, the depth of the bill not exceeding the length of the gonys. Middle toe with claw shorter than tarsus, the middle claw falling short of that of the hallux. Tail longer than the distance from the carpal joint to the tips of the tertials (except in *C. ornatus*.) (*Ridgway*.)

Calcarius lapponicus (LINN.).

LAPLAND LONGSPUR.

PLATE XXVII.

Winter sojourner; abundant. Begin to arrive early in November; return in March.

B. 326. R. 187. C. 220. G. 92. 211. U. 536.

HABITAT. Circumpolar regions; in North America, southward in winter to Kentucky, southern Illinois, Kansas, etc.; casual to Washington, South Carolina and northern Texas.

SP. CHAR. "*Male:* Head (all round) and neck black, extending on the jugulum in a crescentic patch; a broad line from above and behind the eye, sides of neck, a patch in the black of hind head, and whole under parts, white; the sides of body streaked broadly with black. A broad half collar of chestnut on back of neck, separated from the hood narrowly, and from the auriculars and throat broadly, by the white stripe from the eye. Above, brownish black, the feathers sharply edged with brownish yellow. Outer tail feathers white, except the basal portion of inner web and a shaft streak at end; next feather with a white streak in end; rest black. Legs black; bill yellow, tipped with black. In winter plumage, the black and other markings overlaid by rusty and fulvous; beneath, by whitish. *Female:* With the black feathers of head edged with yellowish rusty; the throat white, bordered on the sides and behind by blackish; feathers edged with grayish white; the rufous of nape obscure and streaked with blackish. Autumnal specimens of both sexes differ, in having the pattern of coloration obscured by ochraceous borders to the feathers, and a general rusty cast to the plumage."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.40	11.25	3.70	2.75	.80	.44
Female . . .	6.10	10.75	3.50	2.60	.80	.44

Iris brown; bill, terminal half of ridge and ends black, rest reddish brown; legs, feet and claws black.

This species, like the preceding one, inhabits the desolate regions of the north in summer, and wanders south in winter, in enormous flocks, over the prairies and treeless plains, subsisting upon the seeds of the various plants and grasses; and, in their search for the same, skim over the ground in a wavy, zigzag form, and on alighting run swiftly and heedlessly about, squatting close to the ground at the near approach of an intruder and remaining motionless, hoping to be passed unobserved, but, when startled, rise in a quick, uncertain manner; and it is at such times that the Prairie Falcon and other swift members of the family get in their work, by dashing in and often striking down many of the birds before the flock is well under headway. The following interesting description of their nesting habits, etc., is extracted from Mr. E. W. Nelson's "Report upon Natural History Collections in Alaska:"

"During my residence at Saint Michael's over thirty nests were obtained, and the number might readily have been doubled.

Their nests were so abundant everywhere on the grassy flats that one could scarcely walk over the tundra for half an hour during the proper season without finding from one to half a dozen of them. By the middle of May the males are numerous and in full song along the coast of Norton Sound, having arrived about this time or a little earlier in flocks, and spread rapidly over their breeding grounds. Its range during the nesting season is from Fort Kenai and Kadiak, on the southeast coast of Alaska, north through the entire Territory to the Arctic coast. In July and August Kumlien found the eggs and young of this bird on Disco Island, Greenland, and notes that they keep back from the coast, having a greater preference for the interior than the Snow Bunting (*Snowflake*). I have noted this peculiarity wherever I have had an opportunity of observing their habits along the shores of Behring Sea and the adjoining Arctic coasts. When they arrive, early in May, the ground is still largely covered with snow, with the exception of grassy spots along the southern exposures and the more favorably situated portions of the tundra, and here may be found these birds in all the beauty of their elegant summer dress. The males, as if conscious of their handsome plumage, choose the tops of the only breaks in the monotonous level, which are small, rounded knolls and tussocks. The male utters its song as it flies upward from one of these knolls, and when it reaches the height of ten or fifteen yards it extends the points of its wings upwards, forming a large V-shaped figure, and floats gently to the ground, uttering as it sinks slowly its liquid tones, which fall in tinkling succession upon the ear, and are perhaps the sweetest notes that one hears during the entire spring time in these regions. It is an exquisite jingling melody, having much less power than that of the Bobolink, but with the same general character, and, though shorter, it has even more melody than the song of that well-known bird. There is such joyous exultation in the song that the songster assumes a new place in one's regard. By the last of May or the first of June the birds are mated, and each pair has its snug nest carefully placed in the midst of a sheltering tussock or on a dry knoll, where are deposited from four to

seven eggs, which is a quota. The young are out on the wing sometimes as early as the first of July, but more generally by the 10th of this month, from which time they unite in small bands, frequenting the vicinity of the trading posts and native villages, where they remain in great abundance until the last of August or first of September, when they commence their straggling departure for the south. While in the neighborhood of houses they are extremely heedless of the presence of people, and are nearly as familiar as are the English Sparrows in our cities. By the last of September or first of October the last one has passed away towards the south, and none are seen until returning spring brings them north again. Some doubtless remain to winter along the southeast coast of the Territory, but none are found in the north, nor do they occur at this season on the islands of Behring Sea.

“The nest is generally placed on the drier portions of the flats; a hummock or tuft of grass is chosen, or perhaps a projecting bunch of dwarf willow stems. . . . The walls are thick, and strongly composed of an abundance of material, or they may be a mere cup-shaped shell, barely sufficient to hold the eggs. The majority of nests are composed of rather coarse grass, sometimes with moss interwoven, forming a thick layer, which was frequently as thoroughly water soaked as a wet sponge, when the nest was collected. The amount of material used depends greatly upon the locality; in damp places a much greater amount is made use of, while in dry places the nests are much lighter. Though the outer part of the nest was frequently formed of old and often grimy or partly decayed vegetable matter, the interior was invariably composed of fine, soft, dry, yellow blades of last year's grasses. These, in many instances, are unmixed with other material, and in others are combined with feathers of the Ptarmigan, or other wild fowl. In a few cases, the lining of the nest is a warm cup of feathers, resting upon fine grass, and one has a thick lining of feathers and dog's hair. . . .

“The ground color of the eggs (when it can be seen), throughout the entire series, is a light clay with an apple greenish tinge.

The eggs of one set (386), numbering four, obtained at Saint Michael's, on June 5, 1881, measure, respectively: .90x.65, .98x.64, .95x.65, .92x.68. These eggs have a pale greenish clay-colored ground, and are covered irregularly with a coarse blotching of reddish brown most plentiful at the large end. The markings occupy over half the surface. Another set (210), obtained also at Saint Michael's, in June, is marked somewhat in the same manner, and the eggs measure, respectively: .80x.57, .83x.61, .79x.59, .80x.60, .81x.61. In this set there are dark, zigzag markings on every egg, in addition to the other marks or spots. The third set (No. 114), obtained on June 5, 1880, at the same locality, has the ground color concealed by the close light brown markings, which are so light that the ground color shows through, and produces a decided olive brown over the entire egg. . . . From the sets marked by spots, or by spots and irregular blotches, sparsely enough distributed to allow the ground color to be distinctly seen, there is a regular gradation, the markings becoming heavier, darker colored, and more abundant, until the ground color may be entirely concealed under the rich, warm chocolate brown, which reveals only a very faint mottling of olive brownish, where the ground color is less thickly overlaid. Many of the sets are more or less plentifully marked with irregular, zigzag markings of dark umber brown, very much as in the eggs of the Orioles, but less decided than in the latter. The pattern and style of coloration vary greatly, but are pretty well defined by the variations described in the preceding notes. It may be remarked that eggs of the same set rarely show very much individual variation."

***Calcarius pictus* (SWAINS.).**

SMITH'S LONGSPUR.

PLATE XXVII.

Winter sojourner; common. Arrive in November; return in March.

B. 327. R. 188. C. 221. G. 93, 212. U. 537.

HABITAT. Interior of North America, from the Arctic coast south to Illinois and Texas.

SP. CHAR. "*Male, in spring:* Top and sides of head black. A line from bill over the eye, lores, lower and posterior border of the black cheeks, ears (en-

circled by black), and a small patch in the nape, white. Entire under parts, and extending round neck to nape (where it bounds abruptly the black of head), buff or light cinnamon yellow; the under tail coverts paler; the inside of wings white. Feathers of upper surface black, edges with yellowish gray; shoulders of lesser coverts and the greater black; middle white, forming a conspicuous patch. Quills edged externally with white, this involving the whole outer web of outermost primary. Whole of outer and most of second tail feather white. *Female*: The markings of male faintly indicated, but the black and buff wanting. Head above brown, streaked centrally with paler. A narrow dark line on each side of the throat, and brownish streaks across the jugulum and along sides of body. Traces visible of the white marks of the head."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.50	11.30	3.65	2.60	.82	.43
Female	6.20	10.90	3.50	2.50	.80	.42

Iris dark brown; bill—upper and tip of lower dusky, rest pale reddish yellow; legs yellowish brown to flesh color; feet darker; claws blackish.

These birds inhabit the prairies and open, barren lands, breeding through the northern central portion of British America to the Arctic coast, migrating southward in winter, and often associating with other Longspurs and the Horned Larks. Their favorite resorts are along old trails and abandoned wagon roads upon the prairies, where the grass is short. In their search for food they fly near the ground, in an easy, wavy, circling manner, constantly chirruping as they go, dropping down here and there and running swiftly about. Busy bodies, that have to labor hard and long, in order to pick up enough of the tiny seeds upon which they feed to satisfy their wants.

The following is from "North American Land Birds:"

"These birds were observed in large numbers at Fort Anderson, and on the Lower Anderson River, by Mr. MacFarlane, and a large number of their nests obtained. These were all on the ground, and usually in open spaces, but also in the vicinity of trees. The usual number of eggs found in a nest appears to have been four. The nests, for the most part, were constructed of fine, dry grasses, carefully arranged, and lined with down, feathers, or finer materials similar to those of the outer portions. In a few there were no feathers, in others, feathers in different proportions, and in a few the down and feathers composed the

chief portion of the nest, with only a few leaves as a base to the nest. They were sometimes sunk in excavations made by the birds, or placed in tussocks of grass, and, in one instance, placed in the midst of a bed of Labrador tea. . . .

“When their nests are approached, the female quietly slips off, while the male bird may be seen hopping or flying from tree to tree in the neighborhood of the nest, and will at times do all he can to induce intruders to withdraw from the neighborhood.

“The eggs, five in number, have a light clay-colored ground, are marked with obscure blotches of lavender, and darker lines, dots and blotches of dark purplish brown. They measure, .80 x .65.”

***Calcarius ornatus* (TOWNS.).**

CHESTNUT-COLORED LONGSPUR.

PLATE XXVII.

Quite a common resident in the middle and northern part of the State; abundant throughout the State in winter. Begin laying the last of May.

B. 328. 329. R. 189. C. 222. G. 94. 213. U. 538.

HABITAT. A bird of the plains; from the Saskatchewan region, south in winter to the table lands of Mexico, and occasionally straggling far eastward.

SP. CHAR. *Adult male, in summer:* Top of head, stripe behind eye, spot on lower part of ear coverts, chest, breast and belly, black, the lower parts sometimes touched with rufous or chestnut; hind neck deep rufous; broad superciliary stripe, chin and throat white; cheeks pale buff, this sometimes overspreading lores, ear coverts, chin and upper throat; in full plumage, the lesser wing coverts deep black, with posterior row pure white. *Adult male, in winter:* Black of head and lower parts more or less obscured or even concealed by light brownish or dull buffy tips to the feathers; otherwise essentially as in summer. *Adult female:* Above, light grayish buffy brown, streaked with dusky; beneath, pale grayish buffy brown, or dull grayish buff, the breast and belly sometimes streaked with darker; under tail coverts dull buffy whitish. (Plumage softer and colors more blended in winter.) *Young:* Above dusky, the feathers edged and margined with dull whitish and pale brownish buff; wing coverts tipped with dull whitish; an indistinct streaked whitish superciliary stripe; ear coverts streaked dusky and pale brownish; malar region, chin and throat white, flecked more or less with grayish dusky; rest of lower parts dull grayish buff, streaked, especially on breast, with dusky. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.80	10.40	3.35	2.30	.80	.40
Female . . .	5.40	10.10	3.20	2.20	.80	.40

Iris brown; bill—ends, and occasionally ridge, brown to dusky, rest dull yellow, sometimes bluish; legs brown; feet and claws dark brown.

Prof. J. A. Allen, in his list of birds observed in the vicinity of Fort Hays, Kansas, from May 26th, to July 3d, 1871, says:

“Common out on the plains almost everywhere, it being one of the most interesting and characteristic species of the plains. It has a short, shrill, but very sweet song, which is often uttered while on the wing. It is very wary for so small a bird, and has the habit of circling round the observer when disturbed for several minutes together, approaching tantalizingly near, with feints of nearer approach, but generally keeping well out of range. The nest is a very neat, though slight structure, placed of course upon the ground, and is composed of dry fine grass and root-lets. The eggs are generally five, blotched and streaked with rusty, on a white ground. Full sets of freshly laid eggs were first found about June 3d.

“The plumage varies greatly in color in different individuals of even the same sex, the variation being generally in respect to the purity and intensity of the colors. The most highly-colored males have the breast and middle of the abdomen more or less strongly tinged with very bright ferruginous; others have these parts pure black; while in others still the black is obscured by the feathers having brownish white margins. The lesser coverts vary from gray to black. The red tinge on the abdomen seems merely indicative of a high state of plumage, those thus marked also having the lesser coverts black; but they are also black in some specimens that are tinged with red. The highest colored female (the sex determined by dissection) was nearly as brightly colored as the paler colored males, having the same chestnut collar, and the black on the breast nearly as distinct as some of the males. It was also nearly as large, and until dissected was supposed to be an immature male. Thirty specimens of the bird were obtained, and three full sets eggs.”

A set of four eggs, collected June 13th, 1871, near Jamestown, Dakota, from a nest on the ground, made wholly of dried grasses, measure: .70x.53, .70x.53, .71x.56, .72x.56; grayish white, obscurely mottled with pale purple, and overlaid with spots and splashes of dark reddish brown; in form, ovate.

GENUS **RHYNCHOPHANES** BAIRD.

Bill stout, conical, the gonys larger than the hind toe, with its angle considerably posterior to the middle of the bill; maxilla equal to the mandible in depth; mandibular tomium forming a decided angle at the base. Middle toe with claw shorter than tarsus, the claw reaching beyond that of the hallux. Tail decidedly shorter than the distance from the carpal joint of the wing to the tips of the tertials. (*Ridgway.*)

Rhynchophanes mccownii (LAWR.).

McCOWN'S LONGSPUR.

PLATE XXVII.

A winter sojourner; common in the western to middle of the State; occasionally straggling into the eastern portion. Begin to leave in March (a few occasionally linger until the first of May); return in October.

B. 330. R. 190. C. 223. G. 95, 214. U. 539.

HABITAT. The Great Plains; north to the Saskatchewan regions; south in winter through Kansas, eastern Colorado, western Texas, New Mexico and Arizona into Mexico; breed from Wyoming and Dakota northward. They have been reported as breeding from northern Kansas northward, and probably do so, but upon inquiry I fail to find any positive proof of the same.

SP. CHAR. Tail feathers (except middle pair) white, broadly tipped with black (outer feathers almost entirely white). *Adult male, in summer:* Middle and posterior lesser wing coverts rufous; crown, rictal stripe and crescentic patch on chest black; sides of head grayish; back, etc., gray or brownish, streaked with dusky; lower parts (except chest) white, tinged laterally with grayish. *Adult male, in winter:* Crown and other upper parts dull brownish buff, streaked with dusky; black rictal streak obsolete, and black patch on chest hidden by light dull buffy tips to feathers. *Adult female:* Similar to winter male, but without concealed black on chest or rufous on wing coverts; the colors brownish above and dull buffy beneath in winter, grayer above and whiter beneath in summer. *Young:* Upper parts dusky, the feathers broadly bordered with pale grayish buff; beneath white, distinctly washed with buff across chest, where sometimes indistinctly streaked. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.00	11.15	3.60	2.40	.80	.44
Female . . .	5.80	10.50	3.30	2.20	.78	.42

Iris brown; bill — terminal half of ridge and tips dusky, rest dull flesh colored; legs and feet dark brown; claws black.

This species inhabits much the same region as the Chestnut-collared, and they are very similar in their habits and actions, frequenting in flocks the high, dry prairies, old trails and places where the grass is short, where they ramble about and search for food. When approached, usually squat close to the ground, in the hope that they will be passed unobserved, but when flushed rise in a quick, uncertain manner, but soon bunch together, and fly in a wavy, circling course for a short distance, and then drop back and heedlessly resume their search for food. During their flights, which are undulating, they utter a chip note at each stroke of the wing.

Their song, heard in the early spring and in the breeding season, is composed of soft, twittering, pleasing notes.

Their nests are placed on the ground, in rather open, exposed situations, and are loosely constructed of dry grasses and lined with the finer leaves of the same and (usually) hairs and feathers. Eggs three to six, .80x.60; dull greenish to olive white, speckled and spotted with varying shades of reddish brown to black; in form, oval.

GENUS *POOCÆTES* BAIRD.

"Bill rather large; upper outline slightly decurved toward the end, lower straight; commissure slightly concave. Tarsus about equal to the middle toe; outer toe a little longer than the inner, its claw reaching to the concealed base of the middle claw; hind toe reaching to the middle of the middle claw. Wings usually long, reaching to the middle of the tail, as far as the coverts, and pointed; the primaries considerably longer than the secondaries, which are not much surpassed by the tertiaries; second and third quills longest; first little shorter, about equal to the fourth, shorter than tail; the outer feathers scarcely shorter; the feathers rather stiff; each one acuminate and sharply pointed; the feathers broad nearly to the end, when they are obliquely truncate. Streaked with brown above everywhere; beneath, on the breast and sides. The lateral tail feather is white. Shoulders chestnut brown. The essential character of the genus consists in the long and pointed wings, longer than the tail and without long tertials, and the rather stiff forked tail, with its acute feathers."

Poocætes gramineus (Gmel.).

VESPER SPARROW.

PLATE XXVII.

A summer resident; not common; during migration, very common in the eastern part of the State. Arrive about the first of April; begin laying early in May.

B. 337. R. 197. C. 232. G. 97, 215. U. 540.

HABITAT. Eastern North America to the plains; from Nova Scotia and the Saskatchewan southward; breed from Virginia, Kentucky and Kansas northward.

SP. CHAR. "Tail feathers rather acute. Above, light yellowish brown; feathers everywhere streaked abruptly with dark brown, even on the sides of the neck, which are paler. Beneath yellowish (sometimes reddish) white; on the jugulum and sides of neck and body streaked with brown. A faint light superciliary and maxillary stripe; the latter margined above and below with dark brown; the upper stripe continued around the ear coverts, which are darker than the brown color elsewhere. Wings with the shoulder light chestnut brown, and with two dull whitish bands along the ends of the coverts; the outer edge of the secondaries also is white. Exposed portion of outer tail feather, and edge and tip of the second, white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.20	10.25	3.15	2.60	.82	.42
Female . . .	6.10	10.10	3.05	2.50	.82	.40

Iris brown; bill dusky, pale yellowish beneath; legs and feet flesh color; claws brown.

This terrestrial species inhabits the dry prairies, pastures and roadsides, and, regardless of the presence of man, is alike at home in the settled and unsettled portions of its range. They are in every sense beneficial, feeding chiefly upon fallen seeds and insect life.

Their flights are usually short, low and undulating. Their song is pleasing—much like that of the Canary, but weaker. John Burroughs, the entertaining writer, and lover of the birds, in "Wake Robin," thus describes its song:

"Have you heard the song of the Field Sparrow? If you have lived in a pastoral country with broad, upland pastures, you could hardly have missed him. Wilson, I believe, calls him the Grass-finch, and was evidently unacquainted with his powers of song. The two white lateral quills of his tail, and his

habit of running and skulking a few yards in advance of you as you walk through the fields, are sufficient to identify him. Not in meadows or orchards, but in high, breezy pasture grounds will you look for him. His song is most noticeable after sundown, when other birds are silent; for which reason he has been aptly called the Vesper Sparrow. The farmer, following his team from the field at dusk, catches his sweetest strain. His song is not so brisk and varied as that of the Song Sparrow, being softer and wilder, sweeter and more plaintive. Add the best parts of the lay of the latter to the sweet vibrating chant of the Wood Sparrow, and you have the evening hymn of the Vesper Bird—the poet of the plain, unadorned pastures. Go to those broad, smooth, uplying fields where the cattle and sheep are grazing, and sit down in the twilight on one of those warm, clean stones, and listen to this song. On every side, near and remote, from out the short grass which the herds are cropping, the strain rises. Two or three long, silver notes of peace and rest, ending in some subdued trills and quavers, constitute each separate song. Often you will catch only one or two of the bars, the breeze having blown the minor part away. Such unambitious, quite unconscious melody! It is one of the most characteristic sounds in nature. The grass, the stones, the stubble, the furrow, the quiet herds, and the warm twilight among the hills, are all subtly expressed in this song; this is what they are at least capable of.”

Their nests are placed on the ground, in open and exposed situations, usually in a cavity or place worked out deep enough to bring the top of the nest on a level with the surface; they are loosely made of grasses, and lined with horse hairs. Eggs four or five, .75x.58; pale greenish white, specked, spotted and blotched with various shades of reddish and purple brown; on some the markings are small, chiefly aggregated around the larger end; in form, oval.

GENUS **AMMODRAMUS** SWAINSON.

“Bill very long, slender and attenuated, considerably curved toward the tip above. The gonys straight. A decided lobe in middle of cutting edge of upper bill. The legs and toes are very long and reach considerably beyond the tip of

the short tail. The tarsus is about equal to the elongated middle toe; the lateral toe equal, their claws falling considerably short of the base of the middle one; the hind claw equal to the lateral one. Wings short, reaching only to the base of the tail; much rounded; the secondaries and tertials equal, and not much shorter than the primaries. The tail is rather shorter than the wings, and graduated laterally; each feather stiffened, lanceolate and acute. Color: Streaked above and across the breast; very faintly on the sides. The essential characters consist in the slender and elongated bill; the long legs reaching considerably beyond the tail, with the lateral claws falling considerably short of the middle one; and the very short, rounded wings, rather longer than the cuneate tail, with its stiffened and lanceolate feathers."

SUBGENUS PASSERCULUS BONAPARTE.

Outer pair of tail feathers longer than middle pair; difference between length of tail and wing much greater than length of bill from nostril (the wing much the longer), and depth of bill at base much less than its length from nostril. Tail three times as long as tarsus, slightly emarginate or double rounded, the depth of the emargination much less than the distance from eye to nostril, the feathers broader and less pointed at tip. (*Ridgway.*)

***Ammodramus sandwichensis savanna* (WILS.).**

SAVANNA SPARROW.

PLATE XXVII.

An occasional winter sojourner in the southeastern part of the State; abundant during migration. Leave in April; begin to return the last of September.

Prof. W. W. Cooke, in his report on "Bird Migration in the Mississippi Valley," says: "The Savanna Sparrow usually breeds from latitude 40° northward, but Mr. Ridgway states that it breeds throughout Illinois, and Mr. Nehrling has found it breeding at Pierce City, Mo. Dr. Watson thinks that in former years he found it nesting at Ellis, Kansas." The birds may occasionally breed in the eastern part of the State, but their natural breeding grounds are northward and eastward. It was probably the western form, *alaudinus*, that Dr. Watson thinks he found nesting at Ellis.

B. 332. R. 193a. C. 227. G. 96, 216. U. 542a.

HABITAT. Eastern North America; west to the plains; south in winter to the Gulf States (Cuba?); breeding from the northern United States to Labrador and Hudson's Bay Territory.

SP. CHAR. "Feathers of the upper parts generally with a central streak of blackish brown; the streaks of the back with a slight rufous suffusion laterally;

the feathers edged with gray, which is lightest on the scapulars, and forms there two gray stripes. Crown with a broad median stripe of yellowish gray; superciliary streak from the bill to the back of the head, eyelids and edge of the elbow yellow, paler behind. A yellowish white mandibular stripe curving behind the ear coverts, and margined above and below by brown. The lower margin is a series of thickly crowded spots on the sides of the throat, which are also found on the sides of the neck, across the upper part of the breast, and on the sides of the body; a dusky line back of the eye, making three on the side of head (including the two mandibular). A few faint spots on the throat and chin. Rest of under parts white; outer tail feathers and primaries edged with white. *Young:* Ground color of the upper parts (except wing and tail) light ochraceous, more brownish on top of head, upper part of back, and on upper tail coverts; the streaks blacker and more conspicuous than in the adult. Beneath with an ochraceous tinge anteriorly, the streaks broader and deeper black than in the adult, though less sharply defined. The infra-maxillary streak expanded into a broad, blackish, elongated blotch. Specimens vary considerably in size, color and shape of bill. Spring birds have the markings sharper and clearer, the dark streaks with little or no suffusion of rufous."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.75	9.25	2.65	2.20	.80	.40
Female . . .	5.50	9.00	2.55	2.10	.80	.38

Iris dark brown; bill dusky, the under pale at base; legs and feet flesh color; claws light brown.

The birds inhabit the prairies and open grounds, preferring the low, moist lands and edges of marshy grounds.

They are strictly terrestrial, run about with great ease, and in their flights keep near the ground. Their food consists of small insect life, and the fallen seeds from weeds and grasses. Harmless, heedless birds, easily approached, but they seldom frequent the dooryards or traveled roads.

Their song is a low sort of trill or twitter, with but little variation or musical tone.

Their nests are placed in depressions, or sunken places in the ground, the brim only coming to the level of the surface; a loose structure of grasses, occasionally lined with horse hairs. Eggs usually four or five, .78x.56; vary somewhat in size, as well as in coloration. A set of four eggs, taken June 31st, 1880, at Newtonville, Mass., from a nest on the ground, are, in dimensions: .74x.55, .74x.58, .80x.58, .81x.58; grayish to greenish white, speckled and blotched with varying shades of reddish brown and lilac, thickest about the larger end; in form, oval.

***Ammodramus sandwichensis alaudinus* (BONAP.).**

WESTERN SAVANNA SPARROW.

PLATE XXVII.

Migratory (may possibly breed); not uncommon in western Kansas; east to the middle portion of the State.

B. 335. R. 193*b*. C. 229. G. —, 217. U. 542*b*.

HABITAT. Western North America, in general, except where replaced on the Pacific coast by varieties *beldingi* and *bryanti*; found breeding from Dakota north to the Arctic coast, and east to western Manitoba.

Mr. William Lloyd, on "Birds of Western Texas," says: "Resident; tolerably common; no nest identified with certainty; found near cultivated fields, and in marshy or boggy lands." South in winter to Mexico.

SP. CHAR. "Similar to *A. sandwichensis savanna*, but smaller; the bills slenderer and more elongated. Little of yellow in the superciliary stripe (most distinct anteriorly); the rest of the head without a tinge of the same; general color much paler and grayer than in *A. sandwichensis savanna*. Breast with only a few spots.

"This western race of *A. sandwichensis savanna* is smaller, considerably paler in general colors, the superciliary stripe with little yellow in it, and the bill more slender and longer; in coloration, some Atlantic coast specimens often exhibit an approximation, especially in the paler tint of the superciliary stripe; but the bill is always decidedly more attenuated in *alaudinus*."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.25	8.90	2.60	1.95	.78	.37
Female . . .	5.20	8.65	2.50	1.90	.78	.37

Iris dark brown; bill—upper dusky, under pale at base; legs and feet flesh color; claws pale brown.

This bleached race of the plains does not essentially differ in any of its habits and actions from the Savanna Sparrow, which it replaces in the West.

Its nest and eggs (.75 x .55) are also similar.

SUBGENUS COTURNICULUS BONAPARTE.

Outer pair of tail feathers shorter than middle pair; difference between length of tail and wing not greater than length of bill from nostril, or else tail longer than wing and much graduated ("*Coturniculus lecontei*"), or depth of bill at base equal to its length from nostril ("*Coturniculus savannarum*"). Crown divided by a very distinct lighter median stripe between two lateral blackish ones. (*Ridgway*.)

***Ammodramus savannarum passerinus* (WILS.).**

GRASSHOPPER SPARROW.

PLATE XXVII.

Summer resident; abundant. Arrive usually about the middle of April to first of May (occasionally earlier); begin laying the last of May; leave the last of September to middle of October. I have noticed a few of the birds in the southern part of the State as late as the middle of November.

B. 338. R. 198. C. 234. G. 98, 218. U. 546.

HABITAT. Eastern United States and southern Canada; west to the plains; south in winter to the Gulf States, Cuba, Porto Rico and the Gulf coast of Mexico.

SP. CHAR. "Feathers of the upper parts brownish rufous or chestnut brown, margined abruptly and narrowly with ash color; reddest on the lower part of the back and rump; the feathers all abruptly black in the central portion; this color visible on the interscapular region, where the rufous is more restricted. Crown blackish, with a central superciliary stripe of yellowish tinged with brown, brightest in front of the eye. Bend of the wing bright yellow; lesser coverts tinged with greenish yellow. Quills and tail feathers edged with whitish; tertiaries much variegated. Lower parts brownish yellow or buff, nearly white on the middle of the belly, darkest on the jugulum. The feathers of the upper breast and sides of the body with obsolete darker centers, these sometimes wanting. Sides of breast against bend of wing with a few black streaks, usually concealed. The young of this species have the jugulum and sides of the breast streaked with black, much more distinct than in the adults, and exhibiting a slight resemblance to *A. henslowii*. The upper parts are less varied."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.00	8.40	2.50	1.85	.75	.43
Female	4.90	8.10	2.40	1.80	.75	.42

Iris brown; bill pale bluish, ridge dusky; legs and feet flesh color; claws light brown.

This little bird inhabits the dry fields, upland prairies and plains, seldom frequenting the low, moist lands. They are strictly terrestrial, running about in their search for seeds and insects; and, upon the approach of an intruder, skulk and hide in the grass like mice, rarely taking wing except when startled; they then rise quickly and dash off in a jerky flight, for a short distance, and then abruptly drop back or dive into the grass.

Its song is only heard during the breeding season; a wheezy, grasshopper trill, from which it derives its name. What it

lacks in musical power it makes up in zeal (like that of its neighbor, Dickcissel). The singer, perched upon a weed or coarse stalk of grass, swells out its little throat, and no doubt charms the lady bird with its simple lay. They generally rear two broods in a season, the males assisting in hatching and rearing the young.

Their nests are placed on the ground, usually in a depression, and concealed in or under a tuft of grass. They are made of old grasses and sometimes lined with hairs. Eggs four to six (usually four), .73x.58. They vary in size. A set of four eggs, collected at Saybrook, Conn., only measure: .65x.53, 68x.53, .69x.56, .70x.57; pure white, with purplish shell markings and thinly spotted with various shades of reddish brown, aggregated thickly around the larger end; in form, rounded oval.

***Ammodramus henslowii* (AUD.).**

HENSLOW'S SPARROW.

Summer resident; rare. Arrive in April; begin laying about the first of May; leave in October.

B. 339. R. 199. C. 236. G. 99, 219. U. 547.

HABITAT. Eastern United States; north to Ontario and southern New England; west to the plains; winters in the Gulf States, and probably southward.

SP. CHAR. Tail graduated; the lateral feathers much shorter than the middle pair, (difference between their tips much greater than length of bill from nostril,) the middle pair longest; tail not longer than wing, its graduation decidedly less than length of exposed culmen; bill stout; its depth at base nearly or quite equal to length from nostril; a blackish rictal and (usually) submalar streak. *Adult*: Head and neck buffy olive, the crown heavily streaked, except along middle line, with black, the hind neck much more narrowly streaked; back and scapulars chestnut, feathers streaked with black and narrowly edged or bordered with whitish; wings mainly chestnut; a blackish streak behind eye, another from corner of mouth, and another along each side of chin and upper throat (last sometimes indistinct); chin and throat pale buff or buffy whitish; chest, sides and flanks deeper buffy streaked with blackish; belly whitish. *Young*: Above, dull brownish buffy, streaked and spotted with black; beneath light buff, the sides (but not chest) streaked with black; a distinct black streak from corner of mouth, but none on side of chin or throat. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.25	7.12	2.18	2.10	.70	.46
Female . . .	5.00	6.95	2.12	1.95	.68	.45

Iris brown; bill dark brown, pale beneath; legs and feet light brown; claws brown.

This species inhabits the grassy fields and prairies. It is closely related to the Grasshopper Sparrow, and does not appear to differ from it in habits or actions. I have had but little opportunity to observe these birds. Mr. Maynard, in his "Birds of Eastern North America," says:

"Henslow's Bunting (Sparrow) is far from being common anywhere in our section, as it is exceedingly local in distribution; and it is fond of grassy meadows, breeding in them. The song is peculiar, consisting of two syllables, sounding like "See-wick," the first being dwelt upon, and the second given quickly, and both uttered in a shrill, grasshopper-like tone. This little Sparrow is retiring in habits, and if startled from the tall grass to which it retreats when alarmed, will rise quickly, fly with a very eccentric movement a short distance, and again seek concealment."

The following description of its nest and eggs is by Mr. Davie, in his "Nests and Eggs of North American Birds:"

"Mr. L. Jones informs me that in Iowa the favorite resorts of this Sparrow during the breeding season are neglected fields and pasture lands. Its nest is placed on the ground, sometimes in a slight depression beneath a tussock of grass; the composition is of fine and coarse grasses, with a few cow hairs. The eggs, Mr. Jones says, are deposited about May 25th. The bird's habits, nests and eggs are described as being similar to those of the Yellow-winged Sparrow (*A. savannarum passerinus*), but the eggs are not pure white in ground color, having a greenish or grayish white tint, profusely dotted and blotched with several shades of brown and lilac shell markings. They are four or five in number, and average .75x.57."

***Ammodramus leconteii* (AUD.).**

LECONTE'S SPARROW.

PLATE XXVII.

Migratory; common. Arrive in April; return in October; a few occasionally winter in the southern part of the State.

B. 340. R. 200. C. 237. G. 100, 220. U. 548.

HABITAT. The Great Plains, north to Manitoba; south in winter to Texas, and along the Gulf coast to Florida, South Carolina and southern Illinois; breeding from Dakota and Minnesota northward.

SP. CHAR. Tail decidedly longer than wing, its graduation greater than length of exposed culmen; bill small and slender, its depth at base less than length from nostril; no dusky rictal or submalar streaks. *Adult:* Median crown stripe buff anteriorly, the rest pale buffy grayish or dull buffy whitish; lateral stripes streaked blackish and brownish, the former usually predominating (nearly uniform black in summer); hind neck streaked chestnut and pale buffy or buffy grayish; sides of head, including broad superciliary stripe, buffy (deeper, almost ochraceous, in winter, paler, sometimes nearly white in summer); the lores and ear coverts light grayish or brownish, the latter bordered above by a blackish streak, becoming larger posteriorly; anterior and lateral lower parts buffy, the sides and flanks streaked with blackish; belly white; upper parts brownish, spotted or striped with blackish and streaked with whitish or buffy. *Young:* General color buff, deeper above, paler beneath, the belly whitish; upper parts streaked and striped with blackish, the chest, sides and flanks more narrowly streaked with the same. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.00	7.00	2.00	2.10	.68	.38
Female	4.85	6.50	1.95	2.00	.68	.38

Iris dark brown; bill—ridge dusky, rest flesh color; legs • and feet light flesh color; claws pale brown.

This little ground bird inhabits the prairies, preferring the low, moist lands where the grass is rank. It is quite a common bird west of the Mississippi, but so shy and retiring it is seldom noticed, skulking and hiding in the grass so closely that it is next to impossible to force it to take wing. A hardy little bird. As proof of this, I have seen several in the depth of winter, at Neosho Falls, Kansas; and December 17th, 1878, one was killed by a Shrike in the near vicinity. It was a very cold day, and the ground deeply covered with snow.

Mr. Ernest Thompson (Seton), on Manitoba birds, says:

“This bird frequents the damp meadows which are a mixture of red willows and sedgy grass. It is commonly found in the willows at all seasons, uttering its peculiar ventriloquial ‘Tweete, tweete,’ whence I knew it as the Willow-tweete, long before I ever heard of Leconte or any name for this bird. But in spring the male may be seen perched on some low twig in the meadow,

pouring out his little soul in a tiny, husky, double note, like "Reese, reese." This is so thin and weak as to be inaudible at thirty yards, yet in uttering it he seems to labor hard, his beak being wide open and pointed straight up to the zenith; he delivers it with such unction that afterwards he seems quite exhausted and sits very still until at length the fit comes on again, as it is sure to do in about ten seconds."

Very little is known with certainty in regard to its nesting habits and eggs. Ridgway, in his "Manual," states that they nest in damp or marshy meadows. Eggs about .75 x .50; speckled or spotted sparsely on larger end with brown and black (sometimes thickly speckled or sprinkled with brown).

SUBGENUS AMMODRAMUS SWAINSON.

Crown without distinct median stripe. Nest on or near ground, in marshes, supported between upright stalks of sedges or coarse grasses (sometimes in low bushes), composed of dried grasses or sedges, the entrance occasionally through one side. Eggs three to five; whitish, speckled or spotted with brown. (*Ridgway.*)

***Ammodramus caudacutus nelsoni* ALLEN.**

NELSON'S SPARROW.

PLATE XXVII.

Summer resident; rare. Arrive the last of April to first of May; probably commence laying about the last of May; latest seen October 14th; no doubt occasionally remain into November.

B. —. R. 201a. C. 241. G. 101, 221. U. 549a.

HABITAT. Eastern United States, chiefly in the Mississippi valley; east during migration to the fresh water marshes of the Atlantic coast.

SP. CHAR. *Adult*: Pileum bluish gray or olive gray medially, umber brown laterally, the lateral stripes more or less streaked with black. A broad superciliary stripe, deep ochraceous, connected behind the auriculars with a broad maxillary stripe of the same color. Auriculars grayish, with a dusky line along upper edge, connecting with a distinct black streak beneath hinder part of the ochraceous superciliary stripe. Scapulars and interscapulars bright olive brown, the outer webs broadly edged with grayish white, separated from the brown by a blackish line. Tertiaries dusky, bordered with rusty whitish or pale rusty. Rump uniform olive brown. Rectrices light raw umber brown, darker along shafts. Chin, throat, breast, sides, flanks and crissum ochraceous, the jugulum, breast, sides and flanks streaked with dusky. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.40	7.50	2.25	2.00	.82	.50
Female	5.15	7.30	2.17	1.90	.82	.50

Iris dark brown; bill—ridge dusky, rest pale, with a faint bluish hue; legs flesh color; feet a shade darker; claws brown.

The birds inhabit the fresh water marshy grounds, edges of reedy ponds and sloughs. They are very active, running about and climbing with ease the stalks of grass or reeds, where they sway about, often head downward, in their search for insect life and seeds. When flushed they fly but a short distance, just clearing the growth, into which they suddenly drop back. Their call note, a sort of "Tweet," is often heard. Their song is a short, weak, unmusical twittering warble, uttered at times as it rises and hovers for a moment, but usually from a perch or as it hops from stalk to stalk of the reeds, rushes and coarse grasses. In the early fall I had a very good opportunity to watch these birds at Inman Lake, McPherson county, Kansas. They were not plenty, but I think two or three pairs must have nested there. Once, while lying in the grass watching for water fowls, I saw two young birds nearly grown. My attention was called to them by their tremulous, clamorous notes, as the parent bird approached with food. I have not been so fortunate as to find their nests and eggs, and fail to find a description of the same farther than set forth in the subgenus. The birds are an inland race of *A. caudacutus*, the coast form that inhabits the salt marshes, and their nesting habits and eggs are presumably alike.

GENUS **CHONDESTES** SWAINSON.

"Bill swollen; both outlines gently curved; the lower mandible as high as the upper; the commissure angulated at the base, and slightly sinuated. Lower mandible rather narrower at the base than the length of the gonys; broader than the upper. Tarsi moderate, about equal to the middle toe; lateral toe equal and very short, reaching but little beyond the middle of the penultimate joint of the middle toe, and falling considerably short of the base of middle claw. Wings long, pointed, reaching nearly to the middle of the tail; the tertials not longer than the secondaries; the first quill shorter than the second and third, which are equal. The tail is moderately long, considerably graduated, the feathers rather narrow and elliptically rounded at the end. Streaked on the back. Head with well defined large stripes. Beneath white, with pectoral spot. Only one species recognized."

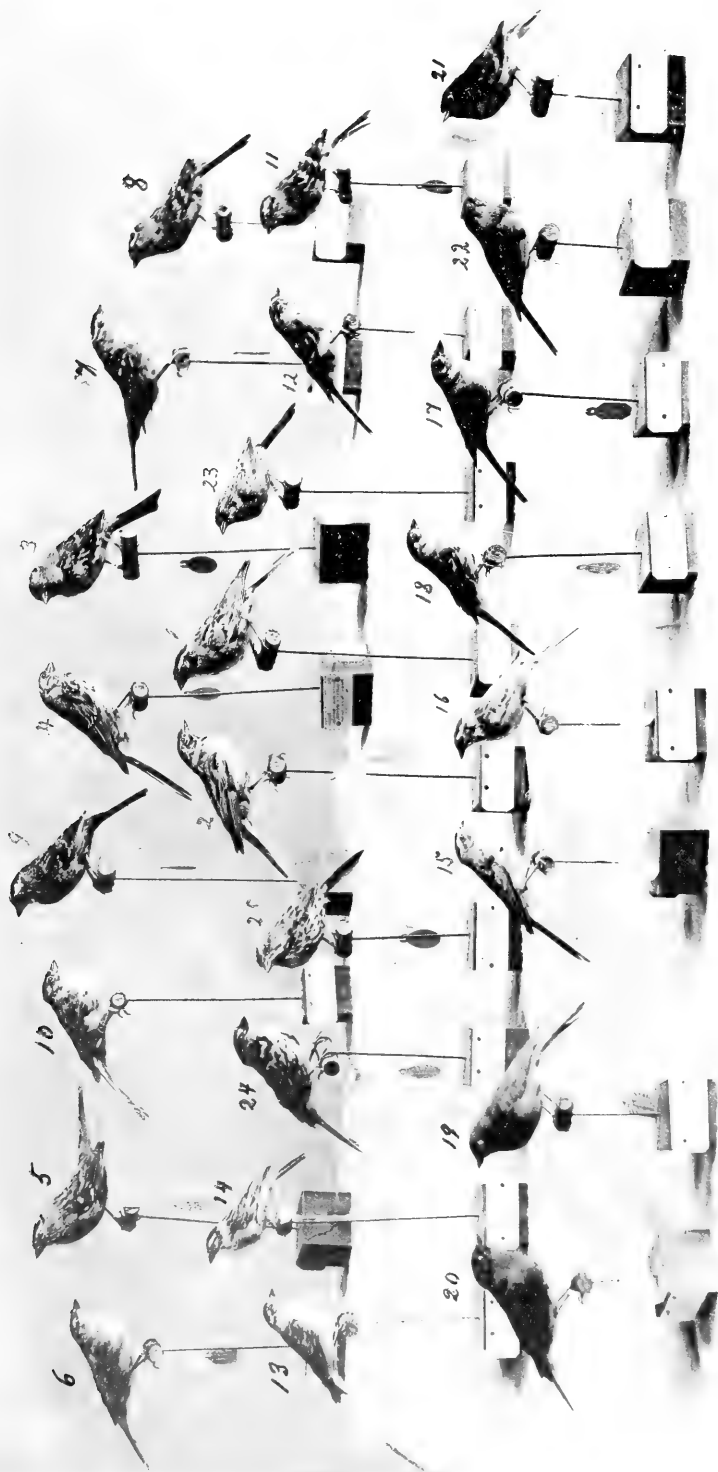


PLATE XXVIII.

LARK SPARROW. Male. 2. Female. 3. HARP S S. SPARROW; Male. 4. Female. 5. WHITE-CROWNED SPARROW. Male. 6. Female. 7. INTERMEDIATE SPARROW; Male. 8. Female. 9. WHITE-THROATED SPARROW; Male. 10. Female. 11. TREE SPARROW. Male. 12. WESTERN TREE SPARROW; Female. 13. CHIPPING SPARROW. Male. 14. Female. 15. CLAY-COLORED SPARROW; Male. 16. Female. 17. FIELD SPARROW; Male. 18. Female. 19. SLATE-COLORED JUNCO; Male. 20. Female. 21. OREGON JUNCO; Male. 22. Female. 23. CASSIN'S SPARROW; Female. 24. SONG SPARROW; Male. 25. Female.

Chondestes grammacus (SAY).

LARK SPARROW.

PLATE XXVIII.

Summer resident; abundant. Arrive in April; begin laying the middle to last of May; return in October.

B. 344. R. 204. C. 281. G. 102, 222. U. 552.

HABITAT. Mississippi valley; north to Iowa, Wisconsin and Michigan (western Manitoba. *Seton*); west to the plains; east regularly to Indiana, western Kentucky, etc.; casually eastward to near the Atlantic coast; south in winter through eastern Texas to the Gulf coast, and eastward to Florida; accidental to Key West.

SP. CHAR. "Hood chestnut, tinged with black toward the forehead, and with a median stripe and superciliary stripe of dirty whitish. Rest of upper parts grayish olive, the interscapular region alone streaked with dark brown. Beneath white; a round spot on the upper part of the breast, a broad maxillary stripe, cutting off a white stripe above, and a short line from the bill to the eye, continued faintly behind it, black. A white crescent under the eye, bordered below by black and behind by chestnut on the ear coverts. Tail feathers dark brown, the outermost edged externally and with more than terminal third white, with transverse outline; the white decreasing to the next to innermost, tipped broadly with white. The colors of the female are duller than in the male, the chestnut less bright, the black not so intense; the pattern, however, is the same. The young bird has the breast and throat with a good many spots of dark brown, instead of the single large one on the breast. The other markings are more obscure."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.75	11.10	3.50	3.00	.78	.50
Female	6.40	10.50	3.25	2.60	.78	.45

Iris brown; bill — upper dusky, under bluish white; legs flesh color; feet a shade darker; claws brown.

This is one of the most abundant birds of our prairies, frequenting alike the high, dry plains, the cultivated fields and open groves; a beautiful, confiding bird, that seems to seek rather than shun the presence of man, often nesting in the gardens and door yards. Dr. Wheaton, in his "Report of the Birds of Ohio," says:

"Birds in trouble sometimes appeal to man for assistance. In the summer of 1875, I was attracted by the singular movements of one of these birds, which flew before me, frequently

alighting, as if endeavoring to draw me away from its nest. Following it for a short distance, it circled several times around a garter snake, which I killed, when the bird perched upon a fence stake and filled the air with his grateful notes. I was still more than ever convinced that the nest or young of the bird was near, and commenced search. During my unsuccessful search the bird disappeared. Returning to the spot where the dead snake lay, I gave it a toss with my stick, which was immediately followed by the reappearance of the bird, which exhibited more anxiety than ever. It flew at the snake, which it seemed to understand was now harmless, picked at and attempted to drag it. Going to the spot, I found the nest, and the snake partly coiled around it. Another toss, and I was again rewarded with a song."

Their harmless ways and rich, clear, varied song, unsurpassed in continuity and melody by any of the family, makes their presence welcome. They are easily tamed, and make desirable cage birds.

Their nests are usually placed in a depression in the ground, but occasionally in low trees or bushes. They are composed of branching stems of weeds and grasses, and lined with fine grass, rootlets and horse hairs. Eggs four or five, .80x.65 (they vary much in size); grayish white, with a few fine spots and zigzag lines of blackish brown, usually thickest around the larger end; in form, rather rounded oval.

GENUS **ZONOTRICHIA** SWAINSON.

"Body rather stout. Bill conical, slightly notched, somewhat compressed, excavated inside; the lower mandible rather paler than the upper; gonys slightly convex; commissure nearly straight. Feet stout; tarsus rather longer than middle toe; the lateral toes very nearly equal. Hind toe longer than the lateral ones; their claws just reaching to base of middle one. Inner claw contained twice in its toe proper; claws all slender and considerably curved. Wings moderate, not reaching to the middle of the tail, but beyond the rump; secondaries and tertials equal and considerably less than longest primaries; second and third quills longest; first about equal to the fifth, much longer than tertials. Tail rather long, moderately rounded; the feathers not very broad. Back streaked. Rump and under parts immaculate, except in young. Head black, or with white streaks, entirely different from the back."

Zonotrichia querula (NUTT.).

HARRIS'S SPARROW.

PLATE XXVIII.

Winter sojourner; abundant in the eastern part of the State; rare in the western. Begin to leave in March; a few frequently linger into May; return in October.

B. 348. R. 205. C. 280. G. 103, 223. U. 553.

HABITAT. From eastern Missouri, Iowa, Minnesota and Manitoba, west to eastern Montana and western Nebraska; south in winter through the Indian Territory to Texas.

SP. CHAR. Top of head black, without trace of median stripe, or of yellow; sides and flanks light buffy brown, broadly streaked with dusky; adult with whole chin and throat, lores and top of head uniform black. *Adult:* Sides of head dull brownish white, or light grayish brown; rest of head mainly uniform black; breast (except centrally) and belly pure white. *Immature:* Top of head black, but this much obscured by whitish or buffy borders to feathers; whole side of head, including sides of forehead and superciliary region, buffy; chin and throat white, bordered along each side by blackish streak (sometimes blotched with black); middle of chest blotched or spotted with black or dark brown; otherwise like adult. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.50	10.80	3.40	3.60	.95	.50
Female . . .	7.25	10.40	3.20	3.45	.95	.50

Iris brown; bill pale yellowish red to reddish brown; in the breeding season nearly coral red; legs pale reddish flesh color; feet a shade darker; claws dark brown.

The birds inhabit the thickets bordering streams and the edges of low woodlands. They are usually met with in small flocks. A favorite resort is in and about the brush heaps, where the land is being cleared. They seldom mount high in the trees, but keep near the ground, upon which they hunt and scratch among the leaves for seeds and insect life.

They commence singing early in the spring, and upon warm, sunshiny days their song can be heard almost continually, as one after the other pours forth its pleasing, plaintive, whistling notes, in musical tone much like the White-throated Sparrow, but delivered in a widely different song.

Very little, if anything, is known with certainty in regard to their nesting habits. They probably breed from northern Min-

nesota and Montana northward, in suitable localities throughout their range, which I feel confident will be found to extend much farther north than Manitoba, its present northern limit as given. Capt. Chas. Bendire describes in "The Auk," Vol. 6, p. 150, a nest containing four eggs, found June 24, 1885, in a willow thicket near Fort Custer, Montana, which he thinks will prove to be the nest and eggs of this bird; and Ridgway says: "Eggs (identification somewhat doubtful), .87 x .68; buffy whitish, thickly speckled with burnt umber, slightly mixed with purplish gray."

Zonotrichia leucophrys (FORST.).

WHITE-CROWNED SPARROW.

PLATE XXVIII.

A rare winter sojourner in the southern part of the State; during migration very common. The bulk move northward in April, a few linger into May; return in October.

B. 345. R. 206. C. 276. G. 104, 224. U. 554.

HABITAT. North America at large, breeding in the Sierra Nevada and Rocky Mountain regions, and eastward north of the Great Lakes to Labrador; wintering throughout the southern portion of the United States and southward into Mexico.

SP. CHAR. Top of head black or brown, divided by a distinct median stripe of white, buff, yellow or gray; sides and flanks grayish brown, without distinct streaks, or else with sides of forehead yellow and back rusty brown; adults with chin and throat whitish or light grayish. Back gray, grayish brown or smoky brown, streaked with brown or black; chin and throat not abruptly white; sides of forehead not yellow; middle crown stripe entirely white, ashy or buffy; top of head without yellow. Adults with lateral crown stripes deep black, median stripe white or pale ashy; a broad white superciliary stripe, below which is a narrower black stripe behind eye (sometimes continued in front of it). Immature, with lateral crown stripes and streak behind eye chestnut brown or burnt umber brown; middle crown stripe dull buffy; superciliary stripe dull light buffy grayish. Edges of wing white; white or buffy median crown stripe, broad as, or broader than, lateral black or brown stripes; adults with back ashy, streaked with burnt umber or vandyke brown, and chest ashy. Lores black or dark brownish, the white, grayish or dull buff superciliary stripe not reaching to bill. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.00	10.30	3.30	3.20	.90	.42
Female . . .	6.50	9.80	3.10	3.00	.88	.40

Iris brown; bill bright reddish brown, tips usually dusky; legs and feet pale reddish brown; claws dark brown.

This handsome species inhabits the hedges and edges of thickets. They are usually found in small flocks, and, while they cannot be properly classed with the terrestrial birds, spend the greater portion of their time on the ground, in search of small seeds, berries and insect life. When not so employed, rest and hop about in the bushes and the lower branches of the trees, seldom perching high. In the winter months they frequent the low grounds where there is a dense growth of bushes, rank grass and weeds. They are not, as a rule, timid or wild, neither appearing to seek or shun the presence of man. The following interesting description of their song and nesting habits, by Mr. T. M. Trippe, is taken from Dr. Cones' "Birds of the Northwest:"

"This Sparrow appears in the lower valleys of Clear Creek county, Colorado, in the first or second week of May, and soon becomes very abundant, frequenting the shrubby banks of the streams, and occasionally venturing some distance upon the hill-sides, but, as a rule, keeping close to the brooks and creeks. As the snow disappears, it ascends higher and higher, reaching timber line by the middle of June, and going up to the extreme limit of the willows and junipers, being nowhere more abundant than in those dense thickets that shut the upper edge of the timber. By far the greater number pass the breeding season there, but a few nest lower down, as far as 8,500 feet, below which it does not occur during summer. In habits, during the breeding season, it resembles the Song Sparrow, seeking its food in the grass and among the dry leaves in the thickets. It sings constantly during June and July, and occasionally in August, mounting to the top of some high bush, the dead limb of a pine, or any convenient perch, well elevated above the surrounding shrubbery, and chanting its ditty, at short intervals, for half an hour or more at a time—a lively, agreeable song, fine and clear, and frequently heard from a score or more birds at once, with a most pleasing effect. While his mate is sitting, the male sings almost constantly throughout the day, and sometimes even

late in the evening, long after dark—I have heard it at midnight, and even as late as one or two o'clock. It is very tame; a pair had their nest within a few feet of our camp at Chicago Lake, and all the bustle and noise did not drive the female from her nest, while her mate would pick up crumbs which we threw to him, almost at our feet. It commences building in July, and the young are hatched about the 20th; the nest is placed on the ground in a clump of bushes, composed of coarse grass and weeds, and lined with fine grass. The eggs are usually four, of a pale bluish green, very thickly speckled and dotted with reddish brown, the latter colors almost wholly obscuring the former at the larger end."

Eggs, .86x.61; in form, oval.

***Zonotrichia leucophrys intermedia* RIDGW.**

INTERMEDIATE SPARROW.

PLATE XXVIII.

Migratory; quite common in the western to middle part of the State; rare in the eastern portion. Arrive in April to first of May; return in October, often remaining until late in November.

B. 346. R. 207a. C. 277. G. —, 225. U. 554a.

HABITAT. Western North America, from the eastern edge of the Great Plains (casually farther) to the Pacific, and from Mexico to Alaska; breeding in Alaska, and eastward throughout the Mackenzie River basin. (In the mountainous regions, probably much farther south.)

SP. CHAR. "In color and markings exactly like *Z. leucophrys*, with the exception of the lores, which are entirely light ashy or buffy white, continuous with the stripe of the same color over the eyes."

The dimensions given below, of a pair in "The Goss Ornithological Collection," show this bird to be somewhat smaller, but this difference may not hold good in the measurements of a large number.

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.80	10.00	3.10	3.10	.88	.40
Female . . .	6.60	9.65	2.95	2.95	.87	.40

Iris brown; bill yellowish to reddish brown, tips usually dusky; legs and feet dull reddish brown; claws dark brown.

This western form does not noticeably differ in any of its habits or actions from the more eastern bird, the White-crowned. Eggs, .86x.60.

Zonotrichia albicollis (Gmel.).

WHITE-THROATED SPARROW.

PLATE XXVIII.

Migratory; common in the eastern part of the State. The bulk arrive and depart in April; return in October, often remaining until about the last of November, and may occasionally winter.

B. 349. R. 209. C. 275. G. 105. 226. U. 558.

HABITAT. Eastern temperate North America, breeding from the northern United States northward; west to the edge of the Great Plains, casually Utah; wintering from about latitude 37° southward.

SP. CHAR. Back rusty brown, or chestnut, streaked with blackish; chin and upper throat white, abruptly contrasted with ash gray of lower throat and chest; sides of forehead yellow. *Adult:* Top of head with a narrow grayish white median and two broad black lateral stripes; superciliary stripe bright yellow (black to above eye), the rest whitish. *Immature:* Superciliary and median crown stripes dull buffy or light brownish, the former more or less distinctly yellowish anteriorly; lateral crown stripes dark brownish; ash gray of ear coverts and chest obscured by brownish. *Young:* Broad lateral crown stripes dull vandyke brown; narrow median stripe dull whitish or pale brownish; superciliary stripe dirty brownish white, scarcely, if at all, yellowish anteriorly; throat not distinctly whitish, and chest dirty brownish white streaked with dusky. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.60	9.65	3.10	3.10	.85	.45
Female . . .	6.25	9.20	2.90	2.90	.85	.45

Iris brown; bill brown, with base of under light blue; legs and feet reddish brown; claws dark brown.

This well known species inhabits the woodlands, hedges and thickets, usually associating together in small flocks, except during the mated season. They feed largely upon fallen seeds, which they pick up from the ground, often scratching among the leaves. Their food consists also of small berries and insect life. They are rather timid, and when startled dive into the thickest growth within reach, but quickly fly back, as if forgetful of the scare. They seldom perch above the lower branches

of the trees, and their flights are low and short, except in migration.

Their song is composed of clear, sweet, plaintive notes, that sound much like, "Peé, pea, pea, peabody, peabody, peabody," and for this reason are generally known as the "Peabody Bird." During the early breeding season they sing almost continually, and as their song is unvarying in tone and make-up, it soon becomes rather tiresome.

Their nests are usually placed upon the ground, under fallen branches or at the roots of trees, occasionally on low bushes; a rather large, compact structure, composed chiefly of coarse grasses, interwoven with stems of the same, weeds and rootlets, and lined with horse hairs, fine grasses, and sometimes with a few feathers. Eggs four or five, varying in size from .80x.61 to .87x.65. They also vary in color, from being profusely spotted and blotched to sparingly and finely dotted with burnt sienna, dark brown and lilac; in form, oval.

GENUS **SPIZELLA** BONAPARTE.

"Bill conical, the outlines slightly curved; the lower mandible decidedly larger than the upper; the commissure gently sinuated; the roof of the mouth not knobbed. Feet slender; tarsus rather longer than middle toe; the hind toe a little longer than the outer lateral, which slightly exceeds the inner; the outer claw reaching the base of the middle one, and half as long as its toe. Claws moderately curved. Tertiaries and secondaries nearly equal; wing somewhat pointed, reaching not quite to the middle of the tail. First quill a little shorter than the second and equal to the fifth; third longest. Tail rather long, moderately forked, and debaricated at the tip; the feathers rather narrow. Back streaked; rump and beneath immaculate. Young streaked beneath."

Spizella monticola (GMEL.).

TREE SPARROW.

PLATE XXVIII.

A winter sojourner; abundant in the eastern portion of the State. Leave the last of March to first of April; begin to return in October.

B. 357. R. 210. C. 268. G. 106, 227. U. 559.

HABITAT. Eastern North America; north to the Arctic regions; west to the edge of the Great Plains; south in winter to the Southern States; breeding in Labrador and the region about Hudson's Bay.

SP. CHAR. With head more or less conspicuously marked, but without black on chin or throat; young, streaked beneath. Wing with two distinct white bands; lower mandible yellow; adult with dusky spot in center of chest. *Adult*: Top of head and streak behind eye deep rufous; rest of head and neck plain ashy, the hindneck tinged with brown; back mixed with rufous and light tawny or dull buffy, streaked with black; lower parts pale ashy anteriorly and laterally, the sides and flanks tinged with buffy (strongly so in winter). *Young*: Top of head dull brownish, streaked with dusky; superciliary stripe and sides of head and neck dull whitish, finely streaked with darker; chest pale dull buffy, tinged laterally with rusty, and distinctly streaked dusky. Plumage darker throughout, the ground color of back largely rusty or rufous, and the black streaks broader; rufous of crown darker and never with more than a slight indication of median ashy stripe; outer webs of greater wing coverts and tertials bright rufous or rusty; whitish or light ashy edgings to tail feathers narrower, wings and tail shorter, bill rather stouter. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.30	9.20	3.00	2.90	.78	.35
Female . . .	6.00	8.60	2.75	2.70	.78	.35

Iris brown; bill—upper and tip of lower blackish, rest yellow; legs brown; feet a shade darker; claws blackish.

This hardy Sparrow frequents the hedges, edges of woods and rank, weedy growths. Social, gregarious birds, that often assemble together in large flocks. From the name they bear, the reader would naturally be led to think they were at least more arboreal than terrestrial, but such is not the case; the name is given them on account of their habit of flying into trees the moment they are disturbed—a habit of many of the family. They search upon the ground almost wholly for their food, which consists chiefly of fallen seeds. When the ground is mostly covered with snow, they are often forced by hunger to fly quite a distance into the prairies or open lands to bare spots of ground, and in so doing, many are caught by the Pigeon. Sparrow or Sharp-shinned Hawks, before they can reach their cover, for these Hawks know their haunts well, and are ever upon the watch, ready to pounce upon, or give chase to, the venturesome birds. While feeding, the birds keep up a low, musical twitter. The males begin to sing quite early in the spring—a rather low, but exceedingly rich and sweet-toned song.

Their nests are placed upon the ground and in low bushes.

They are composed of strippings of bark, grasses and weeds, rather loosely woven together, and lined with feathers, and sometimes with fine grasses and hairs. Eggs four or five, .76x .58; light green, sprinkled minutely and regularly with spots of reddish brown; in form, oval.

***Spizella monticola ochracea* BREWST.**

WESTERN TREE SPARROW.

PLATE XXVIII.

Winter sojourner in the western to middle portions of the State; rare or casual in the eastern portion. Leave about the first of April; return in October.

B. —. R. —. C. —. G. —. —. U. 559a.

HABITAT. Western North America; north to the Arctic regions; east to Dakota, middle Kansas and Texas; south in winter to New Mexico and Arizona. Breeds in Alaska and probably south, in the mountainous regions.

SP. CHAR. Similar to *S. monticola*, but plumage paler throughout, the ground color of back with little, if any, rusty or rufous, and the black streaks narrower; rufous of crown paler, and frequently (especially in winter) with distinctly indicated (sometimes broad and continuous) median ashy stripe; outer webs of greater wing coverts and tertials paler, more buffy or ochraceous; whitish edgings to tail feathers broader; wings and tail longer; bill rather more slender. (*Ridgway*.)

The few specimens that I have examined average about the same in dimensions, etc., as the eastern bird, and, from my limited observation and knowledge, their general habits and actions are the same. Eggs, according to *Ridgway*, .78x.55.

***Spizella socialis* (WILS.).**

CHIPPING SPARROW.

PLATE XXVIII

Summer resident; common in the eastern part of the State, decreasing in numbers westward. Arrive the last of March to first of April; the bulk leave by the last of October.

B. 359. R. 211. C. 269. G. 107, 228. U. 560.

HABITAT. Eastern temperate North America; west to the Rocky Mountains; south in winter to eastern Mexico; breeds chiefly in the middle and northern United States.

SP. CHAR. "Rump, back of neck, and sides of neck and head, ashy. Inter-scapular region with black streaks, margined with pale rufous. Crown contin-

uous and uniform chestnut. Forehead black, separated in the middle by white. A white streak over the eye to nape, and a black one from the base of the bill through and behind the eye. Lores dusky. Under parts unspotted whitish, tinged with ashy on the sides and across the upper breast. Tail feathers and primaries edged with paler, not white. Two narrow white bands across the wing coverts. *Young*: Immature birds and frequently the adult females with the cap streaked with blackish lines, the chestnut nearly or sometimes quite wanting. Birds of the year streaked beneath and on the rump."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.60	8.70	2.75	2.50	.65	.37
Female . . .	5.25	8.25	2.55	2.20	.63	.35

Iris brown; the color of the bill varies, usually dusky, sometimes the under is pale at base; legs and feet flesh color; claws brown.

These well known little Sparrows frequent the cultivated fields, public ways, gardens and dooryards, and even make their homes in cities, seeming to prefer, rather than shun, the presence of man, often raising their young in a bush by the door-side, and fearlessly picking up the crumbs and seeds dropped from the hand. When the breeding season is over, they usually collect together in small flocks, or family groups, but they are not, strictly speaking, gregarious birds. They derive their common name from their sharp, characteristic "Chip." Their song is simply a monotonous repetition of a single note, uttered in rather an unmusical trill. It is often repeated during the mated season, and is occasionally heard in the night.

Their nests are placed in low trees and bushes, and are loosely constructed of grasses and rootlets, and lined thickly with hairs. Eggs three to five, .70x.51; bluish green, thinly spotted around the larger end with purple, light and blackish brown; in form, oval.

***Spizella pallida* (SWAINS.).**

CLAY-COLORED SPARROW.

PLATE XXVIII.

Migratory; quite common throughout the State. Arrive the last of April to first of May; return in October, a few occasionally remaining until about the middle of November.

B. 360. R. 212. C. 272. G. 108, 229. U. 561.

HABITAT. Interior of North America; east from the base of the Rocky Mountains and Arizona to eastern Texas, Missouri and Iowa; casual in Wisconsin; (Mr. Nelson records it as a rare summer resident in Illinois, and I am inclined to think that the bird occasionally breeds in Nebraska, but chiefly from Dakota and Iowa northward;) south in winter from the Saskatchewan Plains and Red River regions into Mexico and Lower California.

SP. CHAR. "Smaller than *S. socialis*. Back and sides of hindneck ashy. Prevailing color above pale brownish yellow, with a tinge of grayish. The feathers of back and crown streaked conspicuously with blackish. Crown with a median pale ashy and a lateral or superciliary ashy white stripe. Beneath whitish, tinged with brown on the breast and sides, and an indistinct narrow brown streak on the edge of chin, cutting off a light stripe above it. Ear coverts brownish yellow, margined above and below by dark brown, making three dark stripes on the face.

"The ashy collar is quite conspicuous and streaked above with brown. The rump is immaculate. The streaks on the feathers of the crown almost form continuous lines, about six in number. The brown line above the ear coverts is a postocular one. That on the sides of the chin forms the lower border of a white maxillary stripe which widens and curves around behind the ear coverts, fading into ashy of the neck. The wing coverts are all margined with paler, and there is an indication of two light bands across the ends of the coverts.

"The young of this species is thickly streaked beneath, over the throat, breast and belly, with brown, giving it an entirely different appearance from the adult. The streaks in the upper parts, too, are darker and more conspicuous. The margins of the feathers are rather more rusty."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.30	7.70	2.50	2.50	.67	.35
Female . . .	5.00	7.50	2.40	2.30	.67	.33

Iris brown; bill—terminal portion of ridge and tips dusky, rest pale reddish brown; legs and feet yellowish flesh color; claws light brown.

This pale Sparrow of the plains is very similar in actions to the Chipping Sparrow, but less familiar and confiding in its habits.

The following interesting description of their nesting habits, etc., is taken from "Birds of the Northwest," by Dr. Coues:

"The Clay-colored Sparrows nest abundantly in Dakota, and especially along the Red river, in the open, low underbrush by the river side, and among the innumerable scrub-willow copses of the valley. They pair here the latter part of May, when the

males come into full song; the nests are built, and the complement of eggs laid, usually by the middle of June. During this month, while the females are incubating, the males mount the tops of the bushes and sing continually—indeed, I know of no more assiduous and persistent songster than this little bird is, although his vocal efforts are of an humble sort. His ditty is a simple staff of three notes and a slight trill—nothing like the continuous song of the Chipbird. In places where the birds are plentiful, several males may be in sight at once, each on his own bush clump, while his mate is nesting below. As soon as incubation is over, the habit is entirely changed, and the males become as inconspicuous as their consorts. The pairing season, during which the males may be seen continually chasing the females about in the bushes, is of short duration; and, preliminaries adjusted, both birds set to work in earnest at their nest, with such success that it is completed and the eggs laid in a week or two. Most of my nests were taken during the first two weeks in June. In one case, in which I visited a nest daily, I found that an egg was laid each day, till the complement of four eggs was filled. I have not found more than four eggs in a nest, and sometimes only three. They are of a light green color, rather scantily and sharply specked with sienna and other rich shades of brown—sometimes very dark brown. Generally the dotting is chiefly confined to the larger end, with only a speck here and there over the general surface; the dots are sometimes in an area at the butt, sometimes partially confluent and wreathed around it. The eggs measure about .62x.50. The nest is always placed low; I never found one so high as a yard from the ground, and generally took nests within a few inches, in the crotch of a willow or other shrub, or in a tuft of weeds. The nest is inartistically built of fine dried grass stems and the slender weed stalks, with perhaps a few rootlets; it is sometimes lined quite thickly with horse hair, sometimes not, then having instead some very fine grass tops. It varies a good deal in size and shape, according to its situation, but may average about three inches across by two deep, with a cavity two inches wide by one and a half deep. In those cases where I

approached the sitting bird, she left the nest when I was a few steps away, and fluttered directly into concealment, without attempting any artifice or venturing to protest against the spoliation of her home."

***Spizella pusilla* (WILS.).**

FIELD SPARROW.

PLATE XXVIII.

Summer resident; common in the eastern part of the State. Arrive the last of March to first of May; begin laying about the middle of May; return in October; a few linger until late in November.

B. 358. R. 214. C. 271. G. 109, 230. U. 563.

HABITAT. Eastern United States and southern Canada; west to the edge of the Great Plains; south to the Gulf coast; breeding nearly throughout its range, but chiefly from the southern Middle States northward.

SP. CHAR. Wing not longer than tail (usually shorter). Upper parts with more or less of rusty, and top of head and hindneck without dusky streaks. *Adult:* Top of head with two rusty or sandy brownish lateral stripes and a dull grayish median stripe, the latter often indistinct, sometimes nearly obsolete; back streaked with black, on a uniform rusty, rusty and buffy grayish, or chiefly buffy grayish ground; both rows of wing coverts tipped with whitish or light buffy; a rusty streak behind eye, enlarged to a spot posteriorly; sides of head otherwise grayish, but tinged with brownish or buffy in winter; sides of breast with a rusty spot; lower parts whitish, tinged with grayish or buffy (or both) anteriorly; bill reddish cinnamon. *Young:* Essentially like the adult, but colors duller and more suffused; markings of head much less distinct, and lower parts (especially breast) streaked with dusky. Color much more rusty above, with median grayish crown stripe usually very narrow and indistinct (sometimes obsolete), and wings and tail shorter. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male . . .	5.60	8.40	2.70	2.75	.70	.35
Female . . .	5.40	8.00	2.50	2.55	.67	.35

Iris dark brown; bill reddish; legs and feet flesh color; claws brown.

This species frequents the edges of woodlands, borders of fields and orchards, sometimes the gardens, but as a rule a rather retiring bird, that seldom makes its home in the near vicinity of dwellings. Their food (which is similar to that of the Sparrow

family) is procured chiefly from off the ground. They perch in bushes and on the lower branches of trees, rarely mounting into the tree tops. Their flights are low, short, and rather undulating. Their song is not powerful, but varied, plaintive and sweet; it is kept up until late in the autumn, and is often heard during the middle of the day, when most of our songsters are silent.

Their nests are placed on the ground, also in bushes and low trees; usually on the ground on uplands, and in trees and bushes on low, bottom lands; loosely constructed of weeds and grasses, and lined with hairs and small thread-like stems of plants. Eggs three to five, .69 x .52; grayish to greenish white, and, as a rule, finely and evenly spotted with reddish brown; in form, oval.

GENUS **JUNCO** WAGLER.

"Bill small, conical; culmen curved at the tip; the lower jaw quite as high as the upper. Tarsus longer than the middle toe; outer toe longer than the inner, barely reaching to the base of the middle claw; hind toe reaching as far as the middle of the latter; extended toes reaching about to the middle of the tail. Wings rather short; reaching over the basal fourth of the exposed surface of the tail; primaries, however, considerably longer than the secondaries and tertials, which are nearly equal. The second quill longest, the third to fifth successively but little shorter; first longer than sixth, much exceeding secondaries. Tail moderate, a little shorter than wings; slightly emarginated and rounded. Feathers rather narrow; oval at the end. No streaks on the head or body; colors above uniform on the head, back, or rump, separately or on all together. Belly white; outer tail feathers white. Young birds streaked above and below.

"The essential characters of this genus are, the middle toe rather shorter than the short tarsus; the lateral toes slightly unequal, the outer reaching the base of the middle claw; the tail a little shorter than the wings, slightly emarginate. In *Junco cinereus dorsalis* the claws are longer; the lower mandible a little lower than the upper."

Junco aikenii RIDGW.

WHITE-WINGED JUNCO.

A rare winter visitant in the western to middle portion of the State.

B. —. R. 216. C. 262. G. 110, 231. U. 566.

HABITAT. Rocky Mountains in Colorado and Wyoming, straggling east in winter to middle Kansas and the Indian Territory.

SP. CHAR. "Generally similar to *J. hyemalis*, but considerably larger, with more robust bill; two white bands on the wing, and three, instead of two, outer tail feathers entirely white.

"No. 61302, male; El Paso Co., Colorado, December 11, 1871, C. E. Aiken: Head, neck, jugulum, and entire upper parts, clear ash; the back with a bluish tinge; the lores, quills and tail feathers darker; middle and secondary wing coverts rather broadly tipped with white, forming two conspicuous bands. Lower part of breast, abdomen and crissum pure white; the anterior outline against the ash of the jugulum convex; sides tinged with ash. Three lateral tail feathers entirely white, the third, however, with a narrow streak of dusky on the terminal third of the outer web; the next feather mostly plumbeous, with the basal fourth of the outer web and the terminal half of the inner (along the shaft) white. Wing, 3.40; tail, 3.20; culmen, .50; depth of bill at base, .30; tarsus, .80."

I have never met with this species, and therefore have no personal knowledge in regard to its habits, etc.

Its nest and eggs have not been found. It probably does not differ in its breeding habits from its congeners. Mr. T. M. Trippe, in notes published by Dr. Coues, in "Birds of the Northwest," says, in regard to the different species and races of this genus, at Idaho Springs, Colorado, that this bird is—

"Abundant; does not breed. This race is evidently the most northern of the five, as it arrives latest (in November) and departs earliest (in March), ranging higher, also, than any of the others, up to 10,000 feet, and probably still farther. In its notes and habits the White-winged Snowbird (*Junco*) differs somewhat from its congeners: its song is louder and sweeter; it is less gregarious in its nature; and it frequents brushy hill tops and mountain sides, high up above the valleys and rarely visited by the other species during winter. It is the only Snowbird at all common during winter, choosing as its favorite haunts the bushy ravines and hollows, as well as the valleys of the larger streams, and wandering thence far up on the mountains, associating in small parties only, more than six or eight being rarely seen together. During the coldest weather only the well-marked, typical birds are seen, among which are both males and females, the former being most numerous; but toward the close of winter the females become more abundant, and among a large series of specimens obvious approaches to both *hyemalis* and *oregonus* may be distinguished, especially toward the former. The intergradation, however, is by no means as perfect as that between the two latter races, and a specimen that cannot be de-

cidedly referred to either *aikeni* or *oregonus-hyemalis* is unusual. The white wing bands vary very much; in the largest males they are almost always broad and well defined; in the small males and females they are narrower, sometimes almost obsolete, occasionally wanting on one wing and present on the other, and sometimes wholly wanting or indicated by the faintest trace. In the latter case, the other characteristics of the bird are those of *hyemalis*, while the peculiar features of the latter bird or of *oregonus* are never to be seen where the white bands are well defined. Well-developed males frequently have white lores or white spots on the head and neck."

Junco hyemalis (LINN.).

SLATE-COLORED JUNCO.

PLATE XXVIII.

Winter sojourner; abundant. The bulk leave in March; begin to return about the middle of October.

B. 354. R. 217. C. 261. G. 111, 232. U. 567.

HABITAT. Northern North America; south in winter throughout the eastern United States, and straggling westward to the Pacific coast. Breeds from Nova Scotia and Maine to Alaska.

SP. CHAR. "Everywhere of a grayish dark ashy black, deepest anteriorly; middle of the breast behind and of the belly, the under tail coverts, and first and second external tail feathers, white; the third tail feather white, margined with black. *Female*: Paler in winter, washed with brownish to pinkish brown. *Young*: Streaked above and below.

"The wing is rounded; the second quill longest; the third, fourth and fifth successively a little shorter; the first longer than the sixth. Tail slightly rounded and a little emarginate. In full spring dress there is no trace of any second color on the back, except an exceedingly faint and scarcely appreciable wash of dull brownish over the whole upper parts. The markings of the third tail feather vary somewhat in specimens. Sometimes the whole tip is margined with brown; sometimes the white extends to the end; sometimes both webs are margined with brown; sometimes the outer is entirely white; sometimes the brownish wash on the back is more distinct."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.20	9.70	3.15	2.75	.80	.43
Female . . .	5.90	9.20	2.90	2.60	.80	.40

Iris blackish brown; bill white, with a pinkish, sometimes bluish tinge, dark at tips; legs brown; feet dark brown; claws black.

These hardy little birds are at home in the winter storms. They frequent the edges of the woods and borders of fields and open lowlands. A rather timid bird, that only seeks the abode of man when the ground is covered with snow. Hunger then overcomes fear, and they become a familiar bird about the yards and stables, hopping nimbly about among the cattle and poultry, and eagerly picking up the crumbs and seeds scattered in the door yards; returning to their haunts as the snow melts away, if not as wild, as timid as ever, darting into cover at the slightest disturbance, but quickly returning, as if forgetful of the scare. They associate together in small flocks, except during the mated season, but are of rather a quarrelsome nature, and not a real social, happy group. When at rest, they perch in the bushes and trees near the ground, rarely ever flying into the tall tree tops. Their usual chip call note sounds much like that of the Chipping Sparrow. In the early spring, as the warm weather awakens the passions of love, the males begin to think of mating, and rattle off a rather low, pleasing song. They are not constant singers, their voice being seldom heard except in the morning and during the early breeding season.

Their nests are placed in a depression in the ground, under logs and in various sheltered situations. I found a nest in Nova Scotia, under an upturned root of a tree. They are also said to occasionally nest in low bushes. Their nests are made of dry grasses, strippings from plants, and hairs, sometimes lined with fine grasses, bits of moss, etc. Eggs usually four or five, .75 x .58; whitish to bluish green, speckled and blotched chiefly about the larger end with dark reddish brown and lilac; in form, oval.

Junco hyemalis oregonus (TOWNS.).

OREGON JUNCO.

PLATE XXVIII. °

Winter sojourner; rare in the eastern, quite common in the middle and western part of the State. Leave in March; return late in October.

B. 352. R. 218. C. 263. G. 112, 233. U. 567a.

HABITAT. Pacific coast of North America; breeding from the higher mountains of Southern California north to Sitka; in

winter straggling east to the Mississippi River, and even to the Atlantic States.

SP. CHAR. "Head and neck all round sooty black; this color extending to the upper part of the breast, but not along the sides under the wings, and with convex outline behind. Interseapular region of the back and exposed surface of the wing coverts and secondaries dark rufous brown, forming a square patch. A lighter, more pinkish tint of same on the sides of breast and belly. Rest of under parts clear white. Rump brownish ash. Upper tail coverts dusky. Outer two tail feathers white; the third with only an obscure streak of white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.20	9.50	3.00	2.85	.80	.45
Female . . .	5.90	9.00	2.75	2.70	.80	.43

Iris dark brown; bill pinkish white, tips dusky; legs flesh color to dark brown; feet and claws dark brown to dusky.

This western form is in habits and actions a counterpart of the eastern bird, *J. hyemalis*, and their nests and eggs as a whole not noticeably different.

GENUS *PEUCÆA* AUDUBON.

"Bill moderate; upper outline and commissure decidedly curved. Legs and feet with the claws small; the tarsus about equal to the middle toe; the lateral toes equal, their claws falling considerably short of the middle one; the hind toe reaching to about the middle of the latter. The outstretched feet reach rather beyond the middle of the tail. The wing is very short, reaching only to the base of the tail; the longest tertials do not exceed the secondaries, while both are much short of the primaries; the outer three or four quills are graduated. The tail is considerably longer than the wings; it is much graduated laterally; the feathers, though long, are peculiarly narrow, linear and elliptically rounded at the ends. Color beneath plain whitish or brownish, with a more or less distinct dusky line each side of the shin. Above, with broad obsolete brown streaks or blotches. Crown uniform, or the feathers edged with lighter."

Peucæa cassini (WOODH.).

CASSIN'S SPARROW.

PLATE XXVIII.

Summer resident in the middle and western part of the State; common. Arrive about the middle of May; begin laying early in June; leave in September.

B. 371. R. 228. C. 254. G. 113, 234. U. 578.

HABITAT. From central Kansas southward and westward, through Texas, New Mexico and Arizona, into northern Mexico.

SP. CHAR. "*Adult*: Ground color of upper parts grayish ash; the middle portion of each feather dull brown (in the form of a blotch), and with a black shaft streak, the latter becoming modified on scapulars, rump and upper tail coverts into transverse spots, those on the upper tail coverts being large and conspicuous and in the form of crescentic spots, the terminal margin of the feathers being lighter ashy, in sharp contrast. Middle tail feathers clear ashy, with a sharply-defined shaft streak of blackish, throwing off obsolete, narrow, transverse bars toward the edge; rest of tail clear dusky brown, the lateral feathers (with whole outer web and margin of inner) dull white; all (except the intermediate) with a large, abruptly-defined, terminal space of dilute brown (decreasing in size from the outer), the margin whitish. Upper secondaries broadly and sharply margined along both edges with dull ashy white, the enclosed portion being clear dusky brown, intensified where adjoining the whitish. A very obsolete superciliary stripe of ashy, becoming whitish over the lores; auriculars more dingy, but without distinct stripe along upper edge. An uninterrupted but indistinct 'bridle' along sides of throat. Lower parts dull white, without any ochraceous, but with a very faint ashy tinge over the jugulum; flanks with broad, somewhat blended streaks of mixed brownish and dusky. Bend of wing edged with light yellow. *Young*: Very similar, but with a few drop-shaped streaks of dark brown on the jugulum and along sides. The feathers above have a more appreciable terminal border of buff."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.25	8.30	2.60	2.80	.78	.50
Female	6.00	8.05	2.50	2.65	.76	.48

Iris brown; bill—upper dusky, with edges and under mandible bluish white, paler at base; legs and feet flesh color; claws pale brown.

This plain, bleached bird frequents the barren spots and sandy lands, dotted here and there with low, stunted bushes, bunch grass or cactus. It is very shy and retiring in its habits, and when approached darts from bush to bush, or runs, skulks and hides like mice, and it is no easy matter to flush it from its hiding place. It is a restless, active bird, and one of the sweetest songsters of the plains. It occasionally sings from a perch, but usually in the air, rising on quivering wings some twenty feet or more, hovering for a moment in mid air, then slowly dropping back with outstretched legs and tail, timing it so as to alight as the last note is uttered. I have heard them sing at night, and in the middle of the day, when the rays of the sun were scorching hot, and other birds had fled to shelter.

Their nests are placed on the ground or in shrubby bushes not

over a foot from the ground. They are loosely constructed of dry grasses, and lined with finer leaves of the same and hairs. Eggs, usually three or four; pure white; in form, oval.

GENUS **MELOSPIZA** BAIRD.

"Body stout. Bill conical, very obsoletely notched, or smooth; somewhat compressed. Lower mandible not so deep as the upper. Commissure nearly straight. Gonys a little curved. Feet stout, not stretching beyond the tail; tarsus a little longer than the middle toe; outer toe a little longer than the inner; its claw not quite reaching to the base of the middle one. Hind toe appreciably longer than the middle one. Wings quite short and rounded, scarcely reaching the base of the tail; the tertials considerably longer than the secondaries; the quills considerably graduated; the fourth longest; the first not longer than the tertials, and almost the shortest of the primaries. Tail moderately long, rather longer from coccyx than the wings, and considerably graduated; the feathers oval at the tips, and not stiffened. Crown and back similar in color, and streaked; beneath thickly streaked, except in *M. georgiana*. Tail immaculate. Usually nest on the ground; nests strongly woven of grasses and fibrous stems; eggs marked with rusty brown and purple, on a ground of clay color."

Melospiza fasciata (GMEL.).

SONG SPARROW.

PLATE XXVIII.

Winter sojourner; rare; common in the eastern part of the State during migration, rare in the western portion. Leave in March; begin to return in October.

In my "Catalogue of the Birds of Kansas," they are entered as "Resident in eastern Kansas; rare in summer." I am now led to think the evidence upon which I based the same is not reliable, and that they seldom nest in their western range much if any south of latitude 41°.

B. 363. R. 231. C. 244. G. 114, 235. U. 581.

HABITAT. Eastern United States and British provinces; west to the base of the Rocky Mountains; breeding from eastern Dakota, northern Illinois, Virginia, etc., northward.

SP. CHAR. "General tint of upper parts rufous and distinctly streaked with rufous brown, dark brown and ashy gray. The crown is rufous, with a superciliary and median stripe of dull gray, the former lighter; nearly white anteriorly, where it sometimes has a faint shade of yellow, principally in autumn; each feather of the crown with a narrow streak of black, forming about six narrow lines. Interscapulars black in the center, then rufous, then pale grayish on the margin, these three colors on each feather very sharply contrasted.

Rump grayer than upper tail coverts, both with obsolete dark streaks. There is a whitish maxillary stripe, bordered above and below by one of dark rufous brown, and with another from behind the eye. The under parts are white; the jugulum and sides of body streaked with clear dark brown, sometimes with a rufous suffusion. On the middle of the breast these marks are rather aggregated so as to form a spot. No distinct white on tail or wings.

"Specimens vary somewhat in having the streaks across the breast more or less sparse, the spots more or less distinct. In autumn the colors are more blended, the light maxillary stripe tinged with yellowish, the edges of the dusky streaks strongly suffused with brownish rufous.

"The young bird has the upper parts paler, the streaks more distinct; the lines on the head scarcely appreciable. The under parts are yellowish; the streaks narrower and more sharply-defined dark brown."

	<i>Length.</i>	<i>Stretch of wings.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.70	8.80	2.70	3.00	.87	.52
Female . . .	6.35	8.45	2.55	2.80	.85	.50

Iris brown; bill dusky, pale bluish to yellowish at base beneath; legs and feet light brown; claws a shade darker.

These hardy birds, during the winter months, frequent in small flocks the thickets and edges of low woodlands, where bordered with rank growths of grasses and weeds; in the summer months, when mated, the more open grounds and marshes. They procure their food almost wholly on the ground; it consists of seeds, tender buds and blossoms of plants, insect life and berries. Their flights are low, short, and rather undulating. They are quite constant and varied songsters. I have often heard them, on warm, sunshiny days, pour forth their sweet winter song of contentment; but it does not compare in volume, energy or melody with their love or breeding song: an indescribable, characteristic one, that justly entitles them to the name they bear.

Their nests are placed near the water, usually on the ground, under a tuft of grass, but occasionally in a bush; a compact nest, composed chiefly of grasses, and lined with the slender, hair-like stems. Eggs four or five, .78x.59; dull greenish white, spotted and blotched with reddish brown, and a few purplish stains; the markings are pretty evenly distributed over the entire egg, in some cases sparingly, in others so thick and confluent as to conceal the ground color; in form, oval.



PLATE XXIX.

1. LINCOLN'S SPARROW; Male. 2. FOX SPARROW; Male. 3. TOWHEE; Male. 4. TOWHEE; Male. 5. Fox Sparrow; Male. 6. Arctic Towhee; Male. 7. Fox Sparrow; Male. 8. LAYALL BUNTING; Male. 9. Fox Sparrow; Male. 10. ROSE-BREASTED GROSBEEK; Male. 11. Fox Sparrow; Male. 12. BLACK-HEADED GROSBEEK; Male. 13. Fox Sparrow; Male. 14. Fox Sparrow; Male. 15. Fox Sparrow; Male. 16. Fox Sparrow; Male. 17. Fox Sparrow; Male. 18. LAYALL BUNTING; Male. 19. Fox Sparrow; Male. 20. Fox Sparrow; Male.

Melospiza lincolni (AUD.).

LINCOLN'S SPARROW.

PLATE XXIX.

Migratory; common. Arrive in April to first of May; return in October.

B. 368. R. 234. C. 242. G. 116, 236. U. 583.

HABITAT. North America at large; breeding from the northern border of the United States, and high mountain ranges south, to far north into the Arctic regions; in winter, south to Panama.

SP. CHAR. "General aspect above that of *M. fasciata*, but paler and less reddish. Crown dull chestnut, with a median and lateral or superciliary ash-colored stripe; each feather above streaked centrally with black. Back with narrow streaks of black. Beneath white, with a maxillary stripe curving round behind the ear coverts; a well-defined band across the breast, extending down the sides, and the under tail coverts, brownish yellow. The maxillary stripe margined above and below with lines of black spots, and a dusky line behind the eye. The throat, upper part of breast and sides of the body with streaks of black, smallest in the middle of the former. The pectoral bands are sometimes paler."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.65	8.45	2.50	2.40	.78	.43
Female . . .	5.30	7.10	2.35	2.20	.78	.43

Iris brown; bill—upper dusky, under bluish, with base yellowish; legs and feet light yellowish brown; claws pale brown.

This widely-distributed species frequents the low, bushy, weedy lands and banks of streams. A rather silent, retiring bird, that darts into cover at the first alarm; and, as it hunts for seeds, insect life, etc., on or near the ground, it is seldom noticed, and often reported rare in localities where it is quite common. Its feeble, Sparrow-like chirp is rarely ever heard, except when startled. I had the pleasure of listening to its song, uttered from the top of small aspen trees or bushes, near the timber line, on Mount Baldy, Colorado; a low and rather prolonged song, but lively, musical and varied. It was late in the month of June, and I am confident that the birds were breeding there, but was unable to find a nest or their young. Mr. Oliver Davie, in "Nests and Eggs of North American Birds," says:

"Mr. Norris has two sets of the eggs of Lincoln's Sparrow, taken in Boulder county, Colorado, on June 22d and July 18th,

respectively. One of the nests was placed in a mossy bank, among small swamp bushes, and composed entirely of grasses; the other was built at the base of an aspen tree. The eggs of one set, three in number, are light greenish white, heavily marked (principally at the larger end) with chestnut and lavender gray; sizes: .81x.58, .81x.59, .82x.60. The nest taken June 22d is of four eggs; these are light pea green, thickly marked with chestnut, and measure: .79x.58, .76x.57, .81x.58, .79x.57."

Melospiza georgiana (LATH.).

SWAMP SPARROW.

PLATE XXIX.

A winter sojourner in the southeastern part of the State; rare; common during migration; but rare in western Kansas. Begin to leave in March, but many remain until late in April; return in October.

B. 369. R. 233. C. 243. G. 115, 237. U. 584.

HABITAT. Eastern North America; west to the Great Plains, accidentally to Utah; north to Newfoundland, Labrador and the Great Slave Lake region. Breeds from Massachusetts, northern Illinois, etc., northward; and winters from the southern portion of the Middle States southward.

SP. CHAR. "Middle of the crown uniform chestnut; forehead black; superciliary streak, sides of head, and back and sides of neck, ash. A brown stripe behind the eye. Back with broad streaks of black, which are edged with rusty yellow. Beneath whitish, tinged with ashy anteriorly, especially across the breast, and washed with yellowish brown on the sides. A few obsolete streaks across the breast, which become distinct on its sides. Wings and tail strongly tinged with rufous; the tertials black, the rufous edgings changing abruptly to white towards the end. *Female*: With the crown scarcely reddish, streaked with black, and divided by a light line. *Young*: Conspicuously streaked beneath the head; above nearly uniform blackish.

"In autumn, the male of this species has the feathers of the crown each with a black streak, and the center of the crown with an indistinct light stripe, materially changing its appearance.

"The forehead is usually more or less streaked with black."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.80	7.75	2.40	2.60	.85	.45
Female . . .	5.60	7.50	2.30	2.40	.82	.43

Iris brown; bill — upper dark brown, edges of same and lower mandible pale brown; legs and feet flesh color; claws light brown.

This species frequents the low, marshy grounds and borders of streams, seldom visiting the high or cultivated lands, and they are therefore only well known to the bird lovers who visit their uninviting haunts. As a rule they are less timid than most birds not familiar with man, and, when cautiously approached, continue their search for food, as if regardless of his presence; hopping about among the reeds and grasses, or running nimbly over the ground, stopping to scratch now and then, and, in their eagerness to catch minute snails, insects and floating seeds, often wade until their bodies touch the water. During the mated season, like most of the family, they are devoted lovers, and both assist in the duties of rearing the young. At intervals the birds utter a rather soft chip, and at times a harsh, scolding note. Dr. Brewer, in "North American Land Birds," thus happily describes its song:

"Except in regard to their song, Wilson's account of their habits, so far as it goes, is quite accurate, although this bird really does have quite a respectable song, and one that improves as the season advances. At first it is only a succession or repetition of a few monotonous trilling notes, which might easily be mistaken for the song of the Field Sparrow, or even confounded with the feebler chant of the *socialis*, although not so varied as the former, and is much more sprightly and pleasing than the other. Still later its music improves, and more effort is made. Like the Song Sparrow, it mounts some low twig, expands its tail feathers, and gives forth a very sprightly trill, that echoes through the swampy thicket with an effect which, once noted and identified with the performer, is not likely to ever be mistaken. Nuttall calls this song loud, sweet and plaintive. It is to my ear more sprightly than pathetic, and has a peculiar ventriloquistic effect, as if the performer were at a much greater distance than he really is."

Their nests are placed on low, wet, grassy lands. They are composed almost wholly of dead grasses and lined with the finer

leaves and stemlets of the same. Eggs four or five, .75x.55; pale bluish to greenish white, specked, spotted and blotched with lilac and various shades of yellowish to reddish brown, thickest about the larger end. They vary greatly in size, and in depth of coloration, some sparingly and others profusely marked. Measurements as high as .80x.57 are given. A set of four eggs, collected June 11th, 1878, at Pewaukee, Wisconsin, from a nest on a bog in Pewaukee Lake, are, in dimensions, only: .70x.54, .70x.55, .70x.55, .71x.54; in form, oval to ovate.

GENUS **PASSERELLA** SWAINSON.

"Body stout. Bill conical, not notched, the outlines straight; the two jaws of equal depth; roof of upper mandible deeply excavated, and vaulted; not knobbed. Tarsus scarcely longer than the middle toe; outer toe little longer than the inner, its claw reaching to the middle of the central one. Hind toe about equal to the inner lateral; the claws all long, and moderately curved only; the posterior rather longer than the middle, and equal to its toe. Wings long, pointed, reaching to the middle of the tail; the tertials scarcely longer than the secondaries; second and third quills longest; first equal to the fifth. Tail very nearly even, scarcely longer than the wing. Inner claw contained scarcely one and a half times in its toe proper. Color: Rufous or slaty; obsoletely streaked or uniform above; thickly spotted with triangular blotches beneath."

***Passerella iliaca* (MERR.).**

FOX SPARROW.

PLATE XXIX.

Winter sojourner; abundant in the eastern part of the State, rare in the western portion. Leave in March; return in October.

B. 374. R. 235. C. 282. G. 117, 238. U. 585.

HABITAT. Eastern North America; west to the plains and Alaska; north to or near the Arctic regions; winters from the southern portion of the Middle States southward to the Gulf coast; breeds from the Gulf of St. Lawrence and Labrador to Alaska.

SP. CHAR. "General aspect of upper parts foxy red, the ground color and the sides of neck being ashy; the interscapular feathers each with a large blotch of fox red; this color glossing to the top of head and nape—sometimes faintly, sometimes more distinctly; the rump unmarked; the upper coverts and surface of the tail continuous fox red. Two narrow white bands on the wing. Beneath, with under tail coverts and axillars, clear white, the sides of head and of throat,

the jugulum, breast and sides of body, conspicuously and sharply blotched with fox red; more triangular across breast, more linear and darker on sides. Sometimes the entire head above is continuously reddish. First quill rather less than fifth. Hind toe about equal to its claw.

"In summer, the ash is more predominant above; in winter, it is overlaid more or less by a wash of rufous, as described above."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.15	11.10	3.50	3.10	.98	.45
Female . . .	6.80	10.75	3.35	3.90	.96	.43

Iris brown; bill—upper dusky, with edges of the same and lower mandible straw color; legs and feet dark flesh color; claws brown.

This large, plump, handsome Sparrow inhabits the tangled thickets and sheltered ravines. It is largely terrestrial in its habits, and, like the Towhees, puts in most of its time scratching among the dead leaves for food. A rather timid bird, that darts into the thickest growths at the least alarm, uttering, as it starts, a sharp chup note. It also has a soft, Sparrow-like chip, or call note, and occasionally utters a few low, soft, warbling notes; but its charming love song is only heard during the breeding season. It is rather short, but unsurpassed in melody by any of the family.

In the month of July, 1879, I found them breeding on Byron Isle, one of the Magdalen group, in the Gulf of St. Lawrence. It was too late in the season for their eggs, as their young birds were nearly full grown. From actions, I think the parent birds were preparing to rear another brood, as the males were singing almost constantly, from early morn till late at night; but their song, so rich and silvery in its tone, was ever welcomed, and never seemed tiresome, and I think they rank next to our Thrushes and Wrens as songsters.

Their nests are usually placed on the ground, in concealed places, occasionally in bushes. Mr. Nelson, in his "Report upon Natural Historical Collections in Alaska," gives the following minute description of a nest and its eggs:

"On June 5th, 1880, a pair was shot, in a thicket near St. Michael's, and the nest secured. The nest obtained is a very strong, compact structure, four and a half inches across by two and

three-fourths high, having a central cavity one and three-fourths inches deep by two and three-fourths across. The outer part of the nest is made of a thin, compact layer of green moss, with a few dead leaves. Inside is a thin layer of dried grass, running circularly up the inside of the nest; this again is lined with a handsomely cross-woven layer of wiry black moss fibers and chestnut club-moss stems; the whole being a very well-made and handsome structure, in which were three eggs with a clayey greenish ground color; two of them are thickly and uniformly dotted with dull reddish brown; between the dots the ground color shows plainly in many places; the third egg is so densely dotted with reddish brown and chocolate that the ground color can hardly be traced, in a few places. This egg measures .90x.70; the other two, .89x.68 and .90x.68."

Eggs three to five; in form, oval.

***Passerella iliaca schistacea* (BAIRD).**

SLATE-COLORED SPARROW.

A rare winter visitant in the western part of the State; to be looked for in sheltered places, along the streams or ravines fringed with a dense growth of bushes, weeds, etc.

B. 376. R. 235c. C. 284. G. 118, 239. U. 585c.

HABITAT. Rocky Mountain regions of the United States; west from the Great Plains to the eastern slope of the Sierra Nevada.

SP. CHAR. "Bill slender, the length being .34 from nostril, the depth .25; the upper mandible much swollen at the base; the under yellow. Above, and on the sides, uniform slate gray; the upper surface of wings, tail feathers and upper coverts dark brownish rufous; ear coverts streaked with white. Beneath, pure white, with broad, triangular, arrow-shaped and well-defined spots of slate gray (like the back) everywhere, except along the middle of the belly; not numerous on the throat. A hoary spot on the base of the bill above the loreal region; axillars nearly white."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.20	10.50	3.20	3.40	.92	.45
Female . . .	7.00	10.20	3.10	3.30	.92	.43

Iris brown; bill — upper dusky, with sides at base dull straw color; tip of under mandible bluish, rest straw color; legs and feet flesh color; claws pale brown.

From my limited observation, I think this bird does not dif-

fer much, if any, in habits and actions from the Fox Sparrow. The following description is taken from "North American Land Birds:"

"Mr. Ridgway found the Slate-colored Sparrow at Carson City, during its spring migrations northward, in the early part of March. At this time it was seen only among the willows along the Carson River, and was by no means common. It had the habit of scratching among the dead leaves, on the ground in the thickets, precisely after the manner of the eastern *P. iliaca*. In the following September, he again found it among the thickets in the upper Humboldt Valley. In Parley's Park, among the Wasatch Mountains, he found it a very plentiful species in June, nesting among the willows and shrubbery along the streams. There it was always found in company with the *M. fallax*, which in song it greatly resembles, though its other notes are quite distinct, the ordinary one being a sharp 'Chuck.'* The nest of the two species, he adds, were also so much alike in manner of construction and situation, and the eggs so similar, that it required a careful observation to identify a nest when one was found.

"The eggs from one nest of the *Passerella iliaca schistacea* measure .90 x .70 of an inch, have a ground of light mountain green, and are profusely spotted with blotches of a rufous brown, generally diffused over the entire egg.

"Another nest of this species, obtained in Parley's Park, in the Wasatch Mountains, by Mr. Ridgway, June 23d, 1869, was built in a clump of willows, about two feet from the ground. The nest is two inches in height, two and a half in diameter, cavity one and a half deep, with a diameter of two. It is composed externally of coarse, decayed water grass, and is lined with fine hair and finer material like the outside. The eggs (four in number) are .80 x .67 of an inch; of a very rounded oval shape; the ground color of a pale green, blotched and marked (chiefly at the larger end) with brown spots of a wine-colored hue."

*While the female is covering her eggs, the male may frequently be heard giving vent to his nuptial song, in the early morning and just before sundown. His lay, however, is rather weak and of small compass, very much resembling that of *Melospiza fasciata montana*. He delivers it while perched on some small twig, overlooking the thicket in which the nest is placed, and generally close to it. Their usual call note is a repeated "Tzip, tzip." (*Bendire*.)

GENUS **PIPILO** VIEILLLOT.

"Bill rather stout; the culmen gently curved; the gonys nearly straight; the commissure gently concave, with a decided notch near the end; the lower jaw not so deep as the upper; not as wide as the gonys is long, but wider than the base of the upper mandible. Feet large, the tarsus as long or a little longer than the middle toe; the outer lateral toe a little the longer, and reaching a little beyond the base of the middle claw. The hind claw about equal to its toe; the two together about equal to the outer toe. Claws all stout, compressed, and moderately curved; in some western specimens the claws much larger. Wings reaching about to the end of the upper tail coverts; short and rounded, though the primaries are considerably longer than the nearly equal secondaries and tertiaries; the outer four quills are graduated, the first considerably shorter than the second, and about as long as the secondaries. Tail considerably longer than the wings, moderately graduated externally; the feathers rather broad, most rounded off on the inner webs at the end.

"The colors vary; the upper parts are generally uniform black or brown, sometimes olive; the under, white or brown; no central streaks on the feathers. The hood sometimes differently colored."

Pipilo erythrophthalmus (LINN.).

TOWHEE.

PLATE XXIX.

A resident in eastern Kansas; common in summer, and throughout the year in the southern portion; in the western part of the State, a rare migrant; begin laying early in May.

B. 391. R. 237. C. 301. G. 119, 240. U. 587.

HABITAT. Eastern United States; west to eastern Dakota and Texas; south to the Gulf coast. May occasionally breed throughout its range, but chiefly from the northern portion of the Southern States northward.

SP. CHAR. "Upper parts generally, head and neck all round, and upper part of the breast, glossy black, abruptly defined against the pure white which extends to the anus, but is bounded on the sides and under the wings by light chestnut, which is sometimes streaked externally with black. Feathers of throat white in the middle. Under coverts similar to sides, but paler. Edges of outer six primaries with white at the base and on the middle of the outer web; inner two tertiaries also edged externally with white. Tail feathers black; outer web of the first, with the ends of the first to the third white, decreasing from the exterior one. Outermost quill usually shorter than ninth, or even than secondaries; fourth quill longest, fifth scarcely shorter. Iris red; said to be sometimes paler, or even white in winter. *Female:* With the black replaced by a rather rufous brown. The tail feathers are only moderately graduated on the sides; the outer about .40 of an inch shorter than the middle. The outer tail feathers have the terminal half white, the outline transverse; the white of the second is

about half as long as that of the first; of the third half that of the second. The chestnut of the sides reaches forward to the back of the neck, and is visible when the wings are closed. A young bird has the prevailing color reddish olive above, spotted with lighter; beneath brownish white, streaked thickly with brown."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.50	11.00	3.55	4.10	1.10	.55
Female	8.20	10.60	3.40	3.80	1.10	.53

Iris bright red; bill black; legs, feet and claws light brown to flesh color.

These peculiarly marked, characteristic birds inhabit, during the winter months, the low bottom timber lands along the streams; in summer, the groves, higher lands, and tangled thickets bordering the woodlands and streams. They are not as a rule as shy and retiring as most birds that make their homes in retired, secluded places. I have often watched them in their haunts, and by sitting down or standing motionless had them come almost to my feet, in their search for worms, insect life and seeds that lie chiefly beneath the old, dead leaves, which they remove by scratching with their feet, often making the leaves fly in every direction. Busy bodies! and as they move about on the ground, or hop from bush to bush, often raise their crests, spread and jerk their tails, not in a nervous manner, but rather as if proud of their good looks and display. They occasionally utter their call note, "Tow-hee, tow-reet," or "Chewink," and when startled, in a sharp and distinct manner.

Their song, heard from the top of a bush or low tree, consists of a few monotonous notes, uttered in a clear, plaintive tone, but not musical enough to rank with our sweet songsters. They are usually met with in pairs or family groups, and I think they remain mated during the year.

Their nests are usually placed in a depression on the ground, under a log or at the foot of a tree, in a brush heap, or most any concealed spot they may fancy, and occasionally in low bushes. I found one at least ten feet from the ground. It was hidden in the sprouts growing from a gnarl on the body of a hackberry tree. They are bulky structures, composed of leaves, twigs, and strippings from grapevines, and lined with

small stems of grasses and rootlets. Eggs four or five, .94x.71; grayish white, spotted with reddish brown, thickest and somewhat running together around the larger end; in form, oval.

Pipilo maculatus arcticus (SWAINS.).

ARCTIC TOWHEE.

PLATE XXIX.

Winter sojourner; rare in the eastern, common in the middle and western part of the State. The bulk leave in April. I have occasionally met with the birds late in May, and they may possibly occasionally breed in the northern portion of the State, but their natural nesting places are much farther north. Begin to return in October.

B. 393. R. 238. C. 304. G. 120, 241. U. 588.

HABITAT. Great Plains, north to the Saskatchewan and Manitoba regions; south to Texas; east to Kansas, Nebraska, etc.; west to the base of the Rocky Mountains; south in winter to Texas.

SP. CHAR. "Upper parts generally, with head and neck all round to the upper part of the breast, black; the rump usually tinged with ashy. Middle of breast and of belly white; sides chestnut; under tail coverts similar, but paler. Entire outer webs of scapulars, and dorsal feathers immediately above them, and of ends of primary and secondary coverts, to the shaft, with edges of outer webs of three innermost tertials, and of the second to the fifth primaries, conspicuously white. Whole outer web of the first, and ends of the first to the fourth, tail feathers, white, the amount diminishing not very rapidly. Outermost quill longer than ninth, sometimes than eighth, nearly always exceeding the secondaries; third quill longest; fourth scarcely shorter. Female paler brown instead of black; the rufous, seen in *P. erythrophthalmus*, tinged with ashy.

"*P. arcticus* is similar in form to *P. erythrophthalmus*, which, however, is readily distinguished by the entire absence of white on the scapulars and wing coverts. The amount of white on the tail decreases much less rapidly."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.25	10.80	3.50	4.00	1.05	.52
Female . . .	8.10	10.30	3.30	3.90	1.03	.52

Iris bright red; bill—upper black, lower bluish black; legs reddish brown; feet and claws dark brown.

I find occasionally in Kansas signs of intergradation with *P. erythrophthalmus*; that is, specimens with a few white wing spots, and others grading up to the fully speckled state.

These birds are not noticeably different in their general habits, actions or song, from the common eastern Towhee. Their call note is, however, quite different, and sounds more like the mew of the Catbird.

Eggs four or five, .94x.69; white, tinged slightly with greenish, and speckled and spotted with reddish and purplish brown, thickest about the larger end, some specimens thickly, others sparingly marked; in form, oval.

GENUS **CARDINALIS** BONAPARTE.

"Bill enormously large; culmen very slightly curved, commissure sinuated; lower jaw broader than the length of the gonys, considerably wider than the upper jaw, about as deep as the latter. Tarsi longer than the middle toe; outer toe rather the longer, reaching a little beyond the base of the middle one; hind toe not so long. Wings moderate, reaching over the basal third of the exposed part of the tail. Four outer quills graduated; the first equal to the secondaries. Tail long, decidedly longer than the wings, considerably graduated; feathers broad, truncated a little obliquely at the end, the corners rounded. Colors red. Head crested.

"The essential characters of this genus are: The crested head; very large and thick bill, extending far back on the forehead, and only moderately curved above; tarsus longer than the middle toe; much graduated wings, the first primary equal to the secondary quills; the long tail exceeding the wing, broad and much graduated at the end."

Cardinalis cardinalis (LINN.).

CARDINAL.

PLATE XXIX.

Resident; common in eastern Kansas; rare in western part of the State. Begin laying about the middle of May.

B. 390. R. 242. C. 299. G. 121, 242. U. 593.

HABITAT. Eastern United States; north regularly to about latitude 41°, casually northward; west to the edge of the Great Plains; south to the Gulf coast. Breeds throughout its range.

SP. CHAR. "*Adult male*: Uniform vermilion red, pure beneath, darker and more brownish above. Lores, anterior portion of malar region, chin and throat black, this color meeting across forehead at base of culmen. Bill bright vermilion; iris brown; feet horn color. *Adult female*: Bill, eyes and feet as in the male. Red of head and body replaced by olive gray above, and grayish buff or pale fulvous below, the crest, sometimes also the breast, tinged with red. Black of throat, etc., replaced by grayish. *Young*: Bill dusky. Plumage much as in the adult female, but browner."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	9.15	12.00	3.80	4.35	.95	.78
Female	8.75	11.50	3.50	4.25	.93	.73

Iris brown; bill red; legs and feet dark reddish brown; claws brown.

This beautiful species, of rich, gaudy colors, proud bearing and clear, melodious song, inhabits the groves and thickets, usually in pairs. A shy, retiring bird, much sought after for the cage, on account of its showy plumage and loud, energetic, varied whistling song, which is almost continuous for at least two-thirds of the year. They do not, however, take kindly to confinement, but flutter and struggle hard and long to escape. In their habits are partially terrestrial, hopping about and scratching upon the ground for their food, which consists of berries, seeds and grains (the corn cribs are often visited in winter), and insects, in their season, help to make up their bill of fare. They also hunt for the same in the bushes, weeds and vines, seldom mounting high in the treetops. Their flights are low and firm, but not long sustained.

Their nests are placed in low trees, bushes and briers, loosely constructed of leaves, grasses, vine-like stems and strippings from grapevines, and lined with finer grasses, which are woven into a rather compact and rounded form. Eggs three or four, .99 x .73; grayish white, irregularly spotted with purple, lilac and reddish brown, thickest about larger end; in form, oval.

GENUS **HABIA** REICHENBACH.

"Bill very large, much swollen; lower mandible scarcely deeper than the upper; feet almost coccothraustine, tarsi and toes very short, the claws strong and much curved, though blunt. First four primaries longest, and nearly equal, abruptly longer than the fifth. Tail broad, perfectly square. *Colors:* Black, white and red, or black, cinnamon, yellow and white, on the male; the females brownish, streaked, with the axillars and lining of the wing yellow."

Habia ludoviciana (LINN.). **ROSE-BREADED GROSBEAK.**

PLATE XXIX.

A rare summer resident in eastern Kansas; quite common during migration; in the western part of the State, a rare migrant. (I have never met with the birds west of Junction City.) Ar-

rive the last of April to first of May; begin laying the last of May; leave for the south in September.

B. 380. R. 244. C. 289. G. 122, 243. U. 595.

HABITAT. Eastern North America; north to Nova Scotia and the Saskatchewan region; west to the edge of the Great Plains; south in winter to northern South America; breeding from about latitude 40° northward.

SP. CHAR. "Upper parts generally, with head and neck all round, glossy black. A broad crescent across the upper part of the breast, extending narrowly down the belly; axillars and under wing coverts carmine. Rest of under parts, rump and upper tail coverts, middle wing coverts, spots on the tertiaries and greater wing coverts, basal half of primaries and secondaries, and a large patch on the ends of inner webs of the outer three tail feathers, pure white.

"Female without the white of quills, tail and rump, and without any black or red. Above, yellowish brown, streaked with darker; head with a central stripe above, and a superciliary on each side, white. Beneath dirty white, streaked with brown on the breast and sides. Upper wing coverts and axillars saffron yellow.

"In the male the black feathers of the back and sides of the neck have a subterminal white bar. There are a few black spots on the sides of the breast just below the red.

"The young male of the year is like the female, except in having the axillaries, under wing coverts, and a trace of a patch on the breast, light rose red.

"The depth of the carmine tint on the under parts varies a good deal in different specimens, but is always of the same rosy hue."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.10	12.70	4.10	3.35	.85	.70
Female	8.00	12.50	4.00	3.30	.85	.70

Iris brown; bill grayish white, with ridge dusky and tips brown; legs and feet grayish blue; claws light brown.

These handsome birds are as much at home in the groves and high, open woodlands as within the low, timbered lands skirting the streams. They occasionally visit the orchards and gardens, in search of the potato bugs and other injurious insects and worms, and later in the season pick a few berries, etc., as part payment for the good services rendered; but they are wary birds and prefer the woodlands for their haunts, feeding chiefly upon the wild seeds, berries, tender buds and insect life that abound in such localities. They occasionally search for food on the ground, but are more arboreal than terrestrial, and are to be looked for largely in the treetops.

Their ordinary call or alarm note is a sharp "Chink." The males are fine songsters, next in rank to the Thrushes and Wrens; a varied song, from a low warble to a loud, emphatic strain as clear and musical as a bell. In the early breeding season, when bubbling over with love and joy, they occasionally sing at night. The birds are easily tamed or reared from the nest, and make interesting pets and cage birds. Their flight is quite rapid and strong, and when going any distance, often high above the trees.

Their nests are placed in small trees, six to twelve feet from the ground, usually towards the top and near the center of the tree. A coarse, loosely constructed nest, made of twigs, stems of weeds, bits of old leaves and rootlets, and lined with a finer material from the same. Eggs three, occasionally four. Size (they vary greatly), .95 x .69; grayish to greenish white, spotted and blotched with various shades of reddish brown, and in some cases with obscure shell-stains of lilac; in form, oval.

***Habia melanocephala* (SWAINS.).**

BLACK-HEADED GROSBEEK.

PLATE XXIX.

Summer resident; quite common in the western to middle part of the State; rare or accidental in the eastern portion. Arrive the first of May; begin laying last of May; leave in September.

B. 381. R. 245. C. 290. G. 123, 244. U. 596.

HABITAT. Western United States; east to middle Nebraska, Kansas and Texas; south into Mexico; known to breed north of Mexico, in suitable localities throughout their range.

SP. CHAR. Under wing coverts clear gamboge yellow or lemon yellow. *Adult male:* Head black, the throat, and sometimes a postocular stripe (occasionally a stripe on middle of crown, also), light cinnamon ochraceous; wings and tail black, varied with white, as in *H. ludoviciana*; back, mixed black and light cinnamon (sometimes uniform black); rump, collar round hindneck, and most of lower parts, uniform buffy cinnamon; belly and under wing coverts lemon yellow; under tail coverts white. *Adult female:* Above, dusky grayish brown, streaked, especially on back and middle line of crown, with pale fulvous or buffy; beneath pale fulvous or ochraceous, streaked on sides and flanks with dusky, but usually without streaks on breast; belly pale yellowish, and under wing coverts clear lemon yellow. *Young:* Much like adult female, but (especially the

male) more buffy, the markings more suffused with the ground color, and remiges and tail feathers tinged with olive greenish. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.20	12.75	4.10	3.75	.87	.70
Female	7.90	12.40	3.95	3.40	.87	.68

Iris brown; bill—upper dusky, under pale bluish; legs, feet and claws dark bluish brown.

This bird is almost a counterpart in habits and actions of the Rose-breasted Grosbeak, which they replace in the west. Their song is also very similar. It is uttered in a little more rapid and varied manner, but is fully as clear and melodious, and always seemed sweeter and nearer to me; perhaps it is because I have usually listened to it in the shrubby groves, far out upon the plains, where almost any sound, animate or inanimate, that breaks the surrounding stillness is welcomed, like the chirrup of crickets in winter at our firesides; and whenever they greet me from the treetops in such places, I feel like pitching my tent, for I know they will sing my lullaby at eve, and refresh me with an early morning song.

Eggs three or four. They vary greatly in size. A set of four eggs, taken May 12, 1877, at Santa Cruz, California, from a nest loosely composed of a few twigs, weeds, rootlets and grasses, placed in a willow tree, about ten feet from the ground, are, in dimensions: .91x.70, .92x.70, .95x.72, .97x.68; bluish to greenish white, speckled and spotted with reddish and rusty brown, thickest around larger end; some heavily, others sparingly marked; in form, oval.

GENUS **GUIRACA** SWAINSON.

“Bill very large, nearly as high as long; the culmen slightly curved, with a rather sharp ridge; the commissure conspicuously angulated just below the nostril; the posterior leg of the angle nearly as long as the anterior, both nearly straight. Lower jaw deeper than the upper, and extending much behind the forehead; the width greater than the length of the gonys, considerably wider than the upper jaw. A prominent knob in the roof of the mouth. Tarsi shorter than the middle toe; the outer a little longer, reaching not quite to the base of the middle claw; hind toe rather longer than to this base. Wings long, reaching the middle of the tail; the secondaries and tertials nearly equal; the second quills longest; the first less than the fourth. Tail very nearly even, shorter than the wings.”

Guiraca cærulea (Linn.).

BLUE GROSBEEK.

PLATE XXIX.

Summer resident; quite common in the western and middle parts of the State; rare in the eastern portion. Arrive the first of May; begin laying about the first of June; leave in September.

B. 382. R. 246. C. 291. G. 124, 245. U. 597.

HABITAT. Southern half of eastern United States; north occasionally to New England and southern Nebraska; west to eastern Colorado and western Texas; south in winter to Cuba and southeastern Mexico; breeding throughout their United States range.

SP. CHAR. "Brilliant blue; darker across the middle of the back. Space around the base of the bill and lores, with tail feathers, black. Two bands on the wing across the tips of the middle and secondary coverts, with outer edges of tertiaries, reddish brown or perhaps chestnut. Feathers on posterior portion of the under surface tipped narrowly with grayish white. Female yellowish brown above, brownish yellow beneath; darkest across the breast. Wing coverts and tertials broadly edged with brownish yellow. Sometimes a faint trace of blue on the tail. The young resemble the female. Autumnal and winter males have the feathers generally, especially on the back and breast, tipped with light brown, obscuring somewhat the blue, though producing a beautiful appearance."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.25	11.15	3.50	2.90	.78	.63
Female . . .	6.75	10.50	3.35	2.70	.75	.62

Iris brown; bill—upper dusky, under light blue; legs, feet and claws dark brown.

These birds prefer, for their homes, the banks of streams, where thinly shirted with trees and bushes, and the grassy uplands in the vicinity of thickets. They are only common in certain localities and not abundant anywhere. They feed chiefly upon the various kinds of seeds, crushing with their thick bills the larger grains. Buds and berries are also occasionally plucked, but in this respect they are not so destructive as their cousins, the Rose-breasted. Insect life is also much sought after, especially while rearing their young, beetles being a favorite food. As a rule the birds are rather silent, uttering now and then their ordinary call note, a ringing "Chip" or "Chink."

In the early breeding season the males sing quite sweetly, but they are not constant or late singers, and therefore not highly rated as song birds.

Their nests are placed in low trees and bushes and are composed of coarse, fibrous strippings, grasses, old leaves, bits of newspapers, and other fragmentary substances, and lined with hairs and rootlets. One taken at Wallace, Kansas, June 16th, 1885, was built close to the body of a willow tree, on small, twig-like branches, about seven feet from the ground; outside made wholly of narrow strippings of the inner bark of dead cottonwood trees, resting on a foundation of a few old leaves and bits of newspapers, and lined with fine bleached rootlets. Eggs three or four, .85x.66; bluish white; in form, oval.

GENUS *PASSERINA* VIEILLLOT.

"Bill deep at base, compressed; the upper outline considerably curved; the commissure rather concave, with an obtuse, shallow lobe in the middle. Gonys slightly curved. Feet moderate; tarsus about equal to middle toe; the outer lateral toe barely longer than the inner, its claw falling short of the base of the middle; hind toe about equal to the middle without claw. Claws all much curved, acute. Wings long and pointed, reaching nearly to the middle of the tail; the second and third quills longest. Tail appreciably shorter than the wings; rather narrow, very nearly even.

"The species of this genus are all very small in size and of showy plumage, usually blue, red or green, in well defined areas. The females, plain olivaceous or brownish; paler beneath."

Passerina cyanea (LINN.).

INDIGO BUNTING.

PLATE XXIX.

Summer resident; common in the eastern part of the State; very rare in the western portion. Arrive the last of April to first of May; begin laying the last of May; the bulk leave in September.

B. 387. R. 248. C. 295. G. 125, 246. U. 598.

HABITAT. Eastern United States; north into Canada; west to the edge of the Great Plains; south in winter to Cuba, eastern Mexico and southern Central America; breeding chiefly north of the Gulf States.

SP. CHAR. "*Male*: Blue, tinged with ultramarine on the head, throat and middle of breast; elsewhere with verdigris green. Lores and anterior angle of chin

velvet black. Wing feathers brown, edged externally with dull bluish brown. *Female*: Brown above; whitish, obscurely streaked or blotched with brownish yellow, beneath; tinged with blue on shoulders, edges of large feathers, and on rump. Immature males similar, variously blotched with blue. Very young birds streaked beneath.

“In this species, which may be considered the type of the genus, the tail is slightly emarginate; the second quill is longest, the first shorter than the fourth.”

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.40	8.90	2.80	2.40	.70	.41
Female . . .	5.25	8.55	2.60	2.20	.67	.40

Iris brown; bill — upper dusky, under blue, usually with a narrow line of black beneath from tip to forks; legs and feet yellowish brown; claws dark brown.

These birds of deep blue, as their name indicates, are rather common throughout their range. They frequent the open woodlands, orchards, cultivated fields, and edges of prairies where skirted with trees, or dotted with scattering groves or thickets. Their food, like all of the *Fringillidæ* family, consists largely of seeds, which they gather from the plants and weeds. Insect life is also much sought after, especially during the breeding season. They are naturally rather shy and suspicious, but, when they select a nesting place near our dwellings, soon become quite unconcerned and fearless. The male, during the early mating season and while the hen bird is sitting, puts in a large share of his time chanting, from the upper branches of a low or detached tree, his simple, pleasing song, but as soon as the young are hatched, he proudly assists his mate in feeding and caring for the little ones, and is so solicitous and watchful that he finds but little time to express his joy in song, and in the latter part of the season is a rather silent bird.

Their nests are placed in low, shrubby bushes. They are composed of leaves, fibers and grasses, and lined with the fine stems of grasses and horse hair. Eggs usually four, .75 x .55; white, with a faint bluish hue (eggs showing a few brown spots are rare and exceptional); in form, oval.

Passerina amoena (Say).

LAZULI BUNTING.

PLATE XXIX.

Summer resident in the western part of the State; rare. Arrive early in May; begin laying about the first of June; leave in September.

B. 386. R. 249. C. 296. G. 126, 247. U. 599.

HABITAT. Western United States; east to the Great Plains; south in winter into Mexico; breeding in suitable localities throughout their United States range.

SP. CHAR. "*Male*: Upper parts generally, with the head and neck all round, greenish blue; the interscapular region darker. Upper part of breast pale brownish chestnut, extending along the sides, and separated from the blue of the throat by a faint white crescent; rest of under parts and axillars white. A white patch on the middle wing coverts, and an obscurely indicated white band across the ends of the greater coverts. Loral region black. *Female*: Brown above, tinged with blue on rump and tail; whitish beneath, tinged with buff on the breast and throat; faint white bands on wings."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.65	9.05	2.85	2.35	.70	.40
Female	5.45	8.60	2.65	2.20	.67	.40

Iris dark brown; bill—upper and tips of lower blackish, rest blue; legs, feet and claws brownish black.

This prettily colored species is similar in habits and actions to the Indigo Bunting, which it replaces in the west. Its song is said by some writers to be very different, yet to my ear it is similar, but uttered in a more feeble and less lively strain.

Their nests are also built in low bushes, and of the same material and make-up. Eggs usually four; bluish white; in form, oval. A set of four eggs, taken May 26th, 1884, in a cañon, near San Diego, California, was built near the ends of thick branches of a bush, about four feet from the ground. It was composed wholly of branching stems from flowering weeds, and lined with the finer stems of the same. The eggs were, in dimensions: .75x.59, .76x.59, .80x.59, .80x.59; in form, oval.

Passerina ciris (LINN.).**PAINTED BUNTING.**

PLATE XXIX.

A summer resident in southern Kansas; quite common in the Gypsum Hills, and along the timbered streams in Barber and Comanche counties. Arrive the last of April to first of May; begin laying the last of May; leave in September.

B. 384. R. 251. C. 292. G. —, 248. U. 601.

HABITAT. South Atlantic and Gulf States; north to North Carolina and southern Kansas; south in winter through eastern Mexico to Panama (in the winter of 1883 I found them very common in western Guatemala); breeding from the Gulf coast northward.

SP. CHAR. "*Male*: Head and neck all round ultramarine blue, excepting a narrow stripe from the chin to the breast, which, with the under parts generally, the eyelids and the rump (which is tinged with purplish), are vermilion red. Edges of chin, loreal region, greater wing coverts, inner tertiary and interseapular region green; the middle of the latter glossed with yellow. Tail feathers, lesser wing coverts and outer webs of quills purplish blue. *Female*: Clear dark green above, yellowish beneath. Young like female.

"Tail very slightly emarginated and rounded; second, third and fourth quills equal; first rather shorter than fifth.

"The female is readily distinguishable from that of *P. cyanea* by the green instead of dull brown of the back, and the yellow of the under parts."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.50	9.00	2.85	2.50	.70	.41
Female . . .	5.30	8.55	2.65	2.25	.70	.40

Iris brown; eyelids red; bill — upper and tips of lower dusky, rest blue; legs and feet dark lead color; claws brown.

These birds, of rich and almost unrivaled plumage, inhabit the thickets and edges of woodlands, preferring the hedges, deep ravines, and streams fringed with thick undergrowth. They are very shy and retiring, but not restless or timid, and soon become accustomed to confinement, and are much prized as cage birds, more on account of their beautiful dress than their song, which is a low, melodious warble, much inferior to that of the Canaries. Complaint is often made that birds moulting in confinement come out with a much duller plumage than in the wild state; but this is not the case when given plenty of sunlight,



PLATE XXX.

1. DICKCISSEL; Male.
2. LARK BUNTING; Male.
3. LARK BUNTING; Female.
4. SCARPLET TANAGER; Male.
5. SCARPLET TANAGER; Female.
6. SUMMER TANAGER; Male.
7. SUMMER TANAGER; Female.
8. PURPLE MARTIN; Male.
9. PURPLE MARTIN; Female.
10. CLIFF SWALLOW; Male.
11. CLIFF SWALLOW; Female.
12. BARN SWALLOW; Male.
13. BARN SWALLOW; Female.
14. TREE SWALLOW; Male.
15. TREE SWALLOW; Female.
16. BOHEMIAN WAXWING; Male.
17. BOHEMIAN WAXWING; Female.
18. CEDAR WAXWING; Male.
19. CEDAR WAXWING; Female.
20. BANK SWALLOW; Male.

room and food, and, when thus carefully treated, breed as freely as within their natural haunts. Their chief food consists of the various kinds of seeds and insect life. Their flights are not swift, but strong and well sustained. The males, like most highly-colored birds, do not assist in hatching the eggs, but share in the duties of feeding and caring for their young.

Their nests are placed in forks of low trees and bushes; they are composed of grasses, sometimes leaves, at the base, and lined with the finer grasses and hairs. Eggs four or five, .78 x .57; creamy to bluish white, thinly speckled and spotted with purple and reddish brown, thickest about the larger end; in form, oval.

GENUS *SPIZA* BONAPARTE.

"Bill large and strong, swollen, and without any ridges; the lower mandible nearly as high as the upper, as broad at the base as the length of the gonys, and considerably broader than the upper mandible; the edges much inflexed, and shutting much within the upper mandible; the commissure considerably angulated at the base, then decidedly sinuated. The tarsus barely to the middle toe; the lateral toes nearly equal, not reaching to the base of the middle claw; the hind toe about equal to the middle one without claw. The wings long and acute, reaching nearly to the middle of the tail; the tertials decidedly longer than the secondaries, but much shorter than the primaries; first quill longest, the others regularly graduated. Tail considerably shorter than the wings, though moderately long; nearly even, though slightly emarginate; the outer feathers scarcely shorter. Middle of back only striped; beneath without streaks.

"This genus comes nearer to *Calamospiza*, but has shorter tertials, more slender bill, weaker and more curved claws, etc."

Spiza americana (Gmel.).

DICKCISSEL.

PLATE XXX.

Summer resident; abundant in the eastern to middle part of the State; rare in the western portion. Arrive the last of April to first of May; begin laying the last of May; leave in September.

B. 378. R. 254. C. 287. G. 127, 249. U. 604.

HABITAT. Eastern United States; north to New England and southern Dakota; west to the Rocky Mountains; south in winter (casually southwest to Arizona and Lower California) to northern South America. Breeds chiefly north of the Southern States.

SP. CHAR. "*Male*: Sides of the head, and sides and back of the neck, ash; crown tinged with yellowish green, and faintly streaked with dusky. A superciliary and short maxillary line, middle of the breast, axillars, and edge of the wing, yellow. Chin, loreal region, patch on side of throat, belly and under tail coverts white. A black patch on the throat, diminishing to the breast and ending in a spot on the upper part of the belly. Wing coverts chestnut. Inter-scapular region streaked with black; rest of back immaculate. *Female*: With the markings less distinctly indicated; the black of the breast replaced by a black maxillary line and a streaked collar in the yellow of the upper part of the breast.

"Among adult males, scarcely two individuals exactly alike can be found. In some, the black of the throat is continued in blotches down the middle of the breast, while in others it is restricted to a spot immediately under the head. These variations are not at all dependent upon any difference of habitat, for specimens from remote regions from each other may be found as nearly alike as any from the same locality. Some specimens from Central America are more deeply colored than North American ones, owing, no doubt, to the freshness of the plumage."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.25	10.00	3.20	2.35	.90	.56
Female . . .	6.00	9.55	3.00	2.20	.90	.54

Iris brown; bill—dusky on ridge, rest bluish; legs, feet and claws brown.

These well-known birds are rare in the eastern portion of their range, rather common in the middle, and abundant westward. They prefer for their homes the open fields and prairies, where they are to be met with in pairs and family groups. The males, during the early breeding season, especially while the females are sitting, make themselves very conspicuous, throughout the day, by perching upon tall weeds, bushes or fence posts, and zealously uttering at short intervals their monotonous attempt at song, making up in quantity what it wholly lacks in melody. In the latter part of the season they do not attempt to sing, and even their call note is seldom heard.

Like most all of the seed eaters, their diet consists also of berries and the various forms of insect life. Upon the wing the birds are strong and easy, and in their migratory flights or when going a distance fly quite rapidly and high, but, about their haunts, low and in rather an undulating manner.

Their nests are built upon the ground and in low bushes; a rather compact structure, usually made of grass, and lined with

its fine, wiry, stem-like branches, occasionally with stemlets of weeds and horse hairs. Eggs four or five, .82x.63; uniform light blue; in form, oval.

GENUS **CALAMOSPIZA** BONAPARTE.

"Bill rather large, much swollen at the base; the culmen broad, gently but decidedly curved; the gonys nearly straight; the commissure much angulated near the base, then slightly sinuated; lower mandible nearly as deep as the upper, the margins much inflected, and shutting under the upper mandible. Nostrils small, strictly basal. Rictus quite stiffly bristly. Legs large and stout. Tarsi a little longer than the middle toe; outer toe rather longer than inner, and reaching to the concealed base of the middle claw; hind toe reaching to the base of the middle claw; hind claw about as long as its toe. Claws all strong, compressed, and considerably curved. Wings long and pointed; the first four nearly equal, and abruptly longest; the tertials much elongated, as long as the primaries. Tail a little shorter than the wings, slightly graduated; the feathers rather narrow and obliquely oval, rounded at the end."

Calamospiza melancorys STEJN.

LARK BUNTING.

PLATE XXX.

Summer resident in the middle and western portions of the State; irregular; some seasons quite common, others rare. Arrive about the first of May; begin laying about the first of June; leave in October.

B. 377. R. 256. C. 286. G. 128, 250. U. 605.

HABITAT. From western Minnesota and middle Texas, west to the Rocky Mountains; south in winter to northern Mexico, and occasionally southwesterly through western Arizona and southern California into Lower California; breeding from middle Kansas north to a little beyond the United States boundary.

SP. CHAR. *Adult male, in summer:* Uniform black, with more or less of a slaty cast, the middle and greater wing coverts white, forming a very conspicuous patch on wing. *Adult female:* Above brownish gray, streaked with dusky, the white wing patch smaller; lower parts white, streaked on breast and sides with dusky. *Adult male, in winter:* Similar to adult female, but feathers of lower parts (especially on belly) black beneath the surface, this showing when feathers are disarranged. *Young:* Similar to adult female, but more buffy; the feathers of the upper parts bordered with buffy white, and streaks on lower parts narrower. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.20	11.50	3.50	3.10	.95	.56
Female ...	6.90	11.00	3.30	2.90	.95	.53

Iris brown; bill—upper and tips of under dark horn blue, rest sky blue; legs brown; feet and claws dark brown.

I have often met with these characteristic birds in various localities. December 14th, 1881, I had the pleasure of finding a small flock in the Cohone valley, about twenty miles northeast from San Diego, California—the extreme western and almost southwestern limits of their winter range. They have somewhat the habits of the Larks, and the seasonable changes in color of the Bobolink, the same ringing chink or call note, and, like them, the males often warble from a bush or weed, and, in full song, rise almost perpendicularly in the air and hover on tremulous wings as they pour forth their sweet, lively, modulated notes. They also gather together in flocks and rove about after the breeding season in much the same manner, but more like the Longspurs.

They are strictly terrestrial, and run nimbly about over the ground in search of seeds, insects, etc. Prof. J. A. Allen, in Doctor Coues' "Birds of the Northwest," says:

"The Lark Bunting, though of rather local distribution and limited range, must be regarded as one of the most characteristic and interesting birds of the plains. Generally, in the breeding season, a number of pairs are found in the same vicinity, while, again, not an individual may be met with for many miles. At other seasons it is eminently gregarious, roving about in considerable flocks. In its song and the manner of its delivery it much resembles the Yellow-breasted Chat (*Icteria virens*), like that bird rising to a considerable distance in the air, and poising itself by a peculiar flapping of the wings during its utterances, then abruptly descending to the ground, to soon repeat the manœuvre. It is a very strong flyer, and seems to delight in the strongest gales, singing more at such times than in comparatively quiet weather. I met with several colonies not far from Fort Hays, in June and July, and later at Cheyenne, Laramie, and in South Park, and in the elevated, open table lands between South Park and Colorado City. They were also frequent along the route from Colorado City to Denver, sometimes considerable flocks being met with. They were then moulting, and the parti-colored

flocks of young and old were quite unsuspicious and easily approached. During the breeding season we found them exceedingly shy and difficult to procure, and were unsuccessful in our efforts to discover their nests."

Their nests are placed in depressions, sunk in the ground so that the top only comes to the surface. They are rudely constructed of grasses and weeds, and lined with fine branching stemlets, and, occasionally, hairs. Eggs four or five, .86x.66; light blue; in form, oval.

GENUS **PIRANGA** VIEILLOT.

Bill subconical and rather cylindrical, the culmen moderately curved, especially toward the tip; maxillary tomium distinctly notched near the tip, and often with a more or less distinct tooth near the middle. Wings rather long (decidedly longer than the tail); primaries nine, the four outer ones longest. Tail moderate, distinctly emarginate; tarsus rather short (about equal to or but little longer than the culmen), the middle toe shorter, or about equal to the length of the bill from the nostril to the tip. Colors chiefly or partly bright red in the adult male, olive-greenish above and yellowish below in the female. (*Ridgway.*)

Piranga erythromelas VIEILL.

SCARLET Tanager.

PLATE XXX.

Summer resident; common in the eastern part of the State; rare in the middle. I have never met with them in the western portion. Arrive the last of April; begin laying about the 20th of May; leave in September.

B. 220. R. 161. C. 154. G. 81, 251. U. 608.

HABITAT. Eastern North America; north to southern Canada and Manitoba; west to the Great Plains; south in winter to West Indies, eastern Mexico, Central America and to middle South America. Breeds throughout its United States range. (May 14th, 1880, I saw a straggler on Brier Island, Nova Scotia.)

SP. CHAR. "Bill shorter than the head. Second quill longest; first and third a little shorter. Tail moderately forked. *Male:* Whole head and body continuous pure, intense scarlet, the feathers white beneath the surface, and grayish at the roots. Wings and tail, with scapulars, uniform intense black; the middle coverts sometimes partly red, forming an interrupted band. *Lining* of wing white. A blackish tinge along sides of the rump, concealed by wings.

Female: Olive green above, yellowish beneath. Wing and tail feathers brown, edged with olivaceous.

"At least three years seem to be required for the assumption of the perfect plumage of the male. In the first year the young male is like the female, but has black wings and tail; in the fall red feathers begin to make their appearance, and the following spring the red predominates in patches."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.35	11.80	3.90	3.00	.75	.62
Female	7.10	11.40	3.75	2.80	.75	.60

Iris brown; bill olive green, with a bronze hue; legs, feet and claws dark blue.

These birds, dressed in brilliant scarlet relieved by jetty black, are unsurpassed in beauty by any of our northern birds. They occasionally frequent the orchards and gardens, but their natural haunts are within the deep forests. The males arrive upon their breeding grounds about a week in advance of the females, and make their presence known by singing loudly from the topmost branches of the trees, and by their oft-repeated call notes, "Chip, chur-r," and harsh challenge, "Chup, charr," on the approach of a rival. On the arrival of the females, they sing in a softer manner from the lower branches. Their courtships are of short duration, and, soon after, a nesting place is selected and preparations for housekeeping commenced. As soon as the females begin to lay, and while sitting, the males, as at first, mount the higher branches and pour forth, with tremulous wings, their song of love, in a less harsh but fully as loud a strain. After the young are hatched, their song is seldom heard. They do not rank high in the musical scale, but their notes are lively and pleasing. In flight they are strong and steady, and they glide with ease swiftly through the treetops; a pretty sight, as a flashing glimpse is caught now and then of his fiery colors, that shine as brightly as the glow of the lightning bug at eve. In the early part of the season they feed chiefly upon insect life; in the latter part, upon berries.

Their nests are placed on horizontal branches of trees, from ten to thirty feet from the ground; a flat, loose structure, composed of stems and strippings from plants, and lined with fine, hair-like fibers and rootlets. Eggs three to five (usually four),

.90 x .65; pale greenish blue, minutely spotted with reddish brown, and occasional markings of obscure purple, often aggregating into a wreath around the larger end; in form, oval.

Piranga rubra (LINN.).

SUMMER TANAGER.

PLATE XXX.

Summer resident; common in the eastern part of the State; rare westward. Arrive the last of April; begin laying about the 20th of May; leave in September.

B. 221. R. 164. C. 155. G. 82, 252. U. 610.

HABITAT. Eastern United States; west to the edge of the Great Plains; north to New Jersey, Illinois and Nebraska; casually north to Iowa, Connecticut and Ontario; accidental to Nova Scotia; south in winter to Cuba, eastern Mexico, Central America and northern South America. Breeds throughout its United States range.

SP. CHAR. *Adult male:* Rich rose red or vermillion, including wings and tail; the former dusky on unexposed portions of the feathers; bill pale; feet darker. *Adult female:* Dull brownish olive above, below dull brownish yellow; no wing bars. *Young male:* Like the female. Male changing plumage shows red, greenish and yellowish in irregular patches, but no black. The female distinguished from *erythromelas* by the dull brownish, ochery or buffy shades of the olive and yellowish, the greenish and yellowish of female *erythromelas* being much clearer and paler; also by the paler bill and feet. The tint of mature males varies greatly; from rosy to brick red. (*Coues.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.50	11.50	3.75	3.00	.75	.78
Female . . .	7.35	11.25	3.65	2.90	.75	.75

Iris brown; bill olive, rather dusky on ridge; legs, feet and claws grayish blue.

These handsome red birds inhabit the groves, and the streams where skirted with trees and underbrush. They are seldom met with in the deep woods. They are shy and retiring, and, notwithstanding their attractive dress, would rarely be noticed were it not for their oft repeated and peculiarly emphatic call note, "Chicky-tucky-tuck," once heard, never forgotten. The song of the males sounds much like the whistling notes of the Balti-

more Oriole, and rather more prolonged and musical than that of the Scarlet Tanager.

Their food consists of insects and berries; the first are caught largely upon the wing. Beetles are the favorite, and, as they are largely nocturnal, the birds are often seen actively darting for them, here and there, until the shades of eve darken into night. The berries are plucked from the bushes and vines, and are also readily picked up from the ground. In flight they are strong, even and quite rapid.

Their nests are usually placed near the extremity of horizontal or drooping branches. I have occasionally found them on the river bottom lands, in the tops of a thick growth of bushes, where hidden beneath the wild, overhanging grapevines; a loose, frail structure, composed mostly of stems of weeds, leaves and strippings from plants, and lined with fine grasses, and occasionally rootlets, etc. Eggs three or four, .95 x .68; light emerald green, speckled and spotted with various shades of purple and dark brown, thickest and running together around the larger end; in form, oval.

FAMILY **HIRUNDINÆ.** SWALLOWS.

"Bill short, triangular, very broad at base (nearly as wide as long) and much depressed, narrowing rapidly to a compressed, notched tip; mouth opening nearly to the eyes. Primaries nine, graduating rapidly from the exterior one; tail feathers twelve. Feet weak; tarsi scutellate, shorter than middle toe and claw. Number of joints in toes normal; basal joint of middle toe partially or entirely adherent to lateral toes. Wings long, falcate. Tail forked. Eyes small. Plumage compact, usually lustrous. All the American species with a white patch on the sides under the wing, and with the iris hazel or brown."*

GENUS **PROGNE** BOIE.

"Body stout. Bill robust, lengthened; lower or commissural edge of maxilla sinuated, decidedly convex for basal half, then as concave to the tip, the lower mandible falling within its chord. Nostrils superior, broadly open, and nearly circular, without any adjacent membrane, the edges rounded. Legs stout. Tarsus equal to middle toe without claw; the joint feathered; lateral toes about equal; the basal joint of the middle toe half free internally, rather less so externally. Claws strong, much curved."

* Birds of this truly insectivorous family have occasionally been known to eat small berries.

Progne subis (LINN.).**PURPLE MARTIN.**

PLATE XXX.

Summer resident; common. Arrive the last of March to first of April; begin laying about the last of April; leave the last of August to middle of September.

B. 231. R. 152. C. 165. G. 75, 253. U. 611.

HABITAT. The whole of temperate North America; south in winter to southern Mexico. Breed throughout their United States range.

SP. CHAR. *Adult male:* Entirely uniform lustrous steel blue, with violet blue reflections; the wings and tail black, slightly glossed with bluish. *Adult female:* Above, glossy blue black, becoming hoary grayish on the forehead, and sometimes on the nape also; throat and jugulum gray; rest of lower parts white, relieved by dusky shaft streaks. *Young:* Similar to adult female, but above less glossy blackish, and the nape crossed by a more distinct grayish collar. The young male is several years in attaining the uniform glossy violet black plumage, the steel blue feathers appearing in gradually coalescing patches. (*Ridgway.*)

<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
8.15	16.25	5.75	3.15	.55	.50

The birds vary somewhat in size, but the females that I have measured average fully as large as the males.

Iris brown; bill, legs, feet and claws black.

These large Swallows are among the first arrivals in the spring, and they are greeted with a hearty welcome, as they return to their summer homes. The bird houses, erected for their especial use, are put in order, or, for want of these inviting, church-like dwellings, boxes and gourds are placed on poles, trees, or outbuildings, to tempt them to remain. In unsettled regions, or where preparations are not made to receive them, they nest in Woodpeckers' holes and natural cavities in trees; but as they have no fear of man, but rather seek his presence and protection, they gladly abandon the wild woods for a farmer's dwelling or a city home. They are greatly attached to their selected homes, and, when not disturbed, will nest for years in the same places. They are faithful guardians, and with a keen eye notice the approach of an enemy, when, with warning notes to others, they so vigorously attack (in a manner similar to the Kingbirds),

as to cause a hasty retreat of even the largest birds of prey. They are, therefore, of great value in the protection of poultry. Like all of the family, they feed exclusively upon the wing, swiftly gliding here and there in their search for insects—the larger ones, especially beetles, are the favorites. A pretty sight, as they dart and flit swiftly, or sail slowly, at times a mere speck in the sky; at others, near the ground or surface of the water, skimming so low as to often bathe their breasts and snap up with their bills a cooling drink. They are noisy, chattering birds; the first to awake us in the morning with twittering notes.

Their attempt at song, though not musical, is quite pleasing. Preparatory to leaving in autumn, they assemble in large flocks, and rest for several days upon the ridges of the highest buildings or dead trees, putting in a large share of their time in dressing or oiling their feathers, and in chattering away in regard to the contemplated movement; occasionally, as of one accord, dash off together for a short distance, and then slowly return to their resting places, as if practicing for the journey. When all are ready, they wing themselves away, usually at night, in a compact body, and almost with the speed of an arrow.

Their nests are composed of various materials, loosely thrown together, such as dry grasses, straws, leaves, bits of rags, strings, etc., and warmly lined with feathers. Eggs four to six, .97x.70; creamy white; in form, oval to ovate.

GENUS **PETROCHELIDON** CABANIS.

“Bill stout and deep, somewhat as in *Progne*. Nostrils entirely superior, open, without overhanging membrane on the inner (or upper) side, but somewhat overhung by short bristles—seen also along base of inner mandible and chin. Legs stout, the tarsi short, not exceeding the middle toe exclusive of its claw; feathered all round for basal third or fourth, though no feathers are inserted on the posterior face. Tail falling short of the closed wings; nearly square or slightly emarginate; the lateral feathers broad to near the ends, and not attenuated.”

Petrochelidon lunifrons (Say).

CLIFF SWALLOW.

PLATE XXX.

Summer resident; locally abundant. Arrive the last of April; begin laying about the middle of May; leave the last of August to middle of September.

B. 226. R. 153. C. 162. G. 76, 254. U. 612.

HABITAT. North America at large, and south to Brazil and Paraguay; breeding (in suitable localities south to Mazatlan, Mexico. *Grayson*) northward into the Arctic circle.

SP. CHAR. "Top of head glossy black, with greenish luster; back and scapulars similar, but rather duller, and sometimes streaked by the appearance of white sides of the feathers—the bases of the feathers, however, being plumbeous; chin, throat and sides of head chestnut brown, this extending round on the nape as a distinct continuous collar, which is bounded posteriorly by dull grayish; the chestnut darkest on the chin, with a rich purplish tinge. Rump above on sides pale chestnut (sometimes fading into whitish); upper tail coverts grayish brown, edged with paler, lighter than the plain brown of the wings and tail; forehead, for the length of the bill, creamy white, somewhat lunate, or extending, in an acute angle, a little over the eye; a very narrow blackish frontlet; loreal region dusky to the bill; a patch of glossy black in the lower part of the breast, and a few black feathers in the extreme chin, the latter sometimes scarcely appreciable; under parts dull white, tinged with reddish gray on the sides and inside of the wings; feathers of crissum brownish gray, edged with whitish, with a tinge of rufous anteriorly (sometimes almost inappreciable).

"There is no difference between the sexes, but the young bird is very different from the adult in the following particulars: The steel blue above is replaced by a lusterless dusky brown, the feathers (except on head) being margined with a creamy tint; the neck merely tinged with rufous; the throat has only a dusky suffusion, and the chin is much mixed with white; the frontal patch is obsolete."

<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
5.75	12.00	4.35	2.20	.48	.30

The females are fully as large as the males.

Iris dark brown; bill and claws black; legs dark reddish brown; feet dark brown.

These birds, of such wide and extended range, are, during the breeding season, only local in their distribution, forming colonies here and there. They are quite common in the eastern part of the continent, and abundant westward, especially on the plateaus and in mountainous regions.

In the settled portions they select for their nesting places the vertical banks and overhanging cliffs along the streams, or in the near vicinity of water. Within the settlements they prefer the habitations of man, and build their nests under the projecting eaves of buildings etc.; the barn the favorite. A happy community, apparently without family jars, or quarrels with their neighbors. Like all the Swallow family, they are birds of the

air. Their feet are weak and legs too short to make any headway walking, and they seldom, if ever, attempt to use them, except as perchers. In motions and actions on the wing they are much like the Purple Martin, but quicker, and flit more in their sudden turns and intricate evolutions, as they sport, or chase the gnats and other small insects upon which they feed.

Their ordinary note is a twitter, and attempt at song a harsh, unmusical squeak.

Their nests are placed close together, and, when under the eaves, form a continuous row. They are composed of mud, tempered with saliva, as it is worked into little pellets with their bills, and are lined with dry grasses, leaves and feathers. When in exposed situations, are built in the shape of a gourd, or retort, with entrance near the top, projecting and turning downward; but under the eaves or in sheltered situations are more globular, and without the long, rounded necks. Eggs four to six (usually four), .77 x .56; white, dotted and blotched with dark reddish brown (the markings vary greatly in size, number, and in distribution, usually thickest about the larger end); in form, oval to ovate.

GENUS **CHELIDON** FORSTER.

"Nostrils lateral. Tarsi short, not exceeding middle toe without its claw; the upper joint covered with feathers, which extend a short distance along the inner face of the tarsus. Tail very deeply forked; the lateral feathers much attenuated, twice as long as the middle. Basal joint of middle toe free for terminal fourth on outside, for half on inside. Nest partly of mud, and lined with feathers; eggs spotted. In type, and in American species, the forehead and throat rufous; a black pectoral collar; tail feathers with large light spots on inner webs."

Chelidon erythrogaster (Bodd.).

BARN SWALLOW.

PLATE XXX.

Summer resident; common. Arrive from about the 10th to last of April; begin laying about the middle of May; leave the last of August to first of September.

B. 225. R. 154. C. 159. G. 77. 255. U. 613.

HABITAT. North America in general; south in winter into South America; found breeding as far south as the City of Mexico, but breed chiefly north of the southern United States.

SP. CHAR. "Tail very deeply forked; outer feathers several inches longer than the inner, very narrow towards the end. Above, glossy blue, with concealed white in the middle of the back. Throat chestnut; rest of lower parts reddish white, not conspicuously different. A steel blue collar on the upper part of the breast, interrupted in the middle. Tail feathers with a white spot near the middle on the inner web. Female with the outer tail feathers not quite so long. In the young birds, the frontal chestnut band is smaller and less distinct."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.25	12.95	4.80	4.50	.45	.32
Female	6.25	12.50	4.60	3.50	.45	.32

Iris dark brown; bill, legs, feet and claws black.

These handsome Swallows excel in easy and graceful movements, in the air, all others of the family, and they are, I think, the swiftest flyers among the birds. They are more evenly distributed during the breeding season than the Cliff Swallows, as the mated pairs often nest alone, and never in very large communities. They are social birds, and, while mated, strongly attached to each other, the male often feeding his mate as she patiently and lovingly sits upon her treasures, and he also assists in rearing the young. Their song is but a succession of sharp, squeaky, warbling twitterings, at times quite animated and pleasing; their call note a simple twit.

Their nests are attached to the sides of rafters in barns and suitable places in outbuildings, under bridges etc., and, in the unsettled portions of the country, under overhanging rocks and in the fissures or cavern-like cavities. A semi-cup-shaped structure, rather roughly constructed of layers of mud and grasses, and lined with the finer grasses and feathers. Eggs three to six (usually four), .77 x .55; pure translucent white, spotted and blotched with purple and varying shades of dark reddish brown, and, occasionally, lilac stains, usually aggregating thickest about the larger end; in form, oval.

GENUS **TACHYCINETA** CABANIS.

"Nostrils lateral, overhung or bordered internally by incumbent membrane. Tarsi with the tibial joint covered by overhanging feathers, adherent a short distance along inner face, about equal to middle toe without claw. Lateral toes equal. Adhesion of basal joint of middle toe variable. Tail emarginate only, or slightly forked; fork not exceeding half an inch in depth. Color blue or green above, with or without metallic gloss; with or without white rump. Entirely white beneath."

Tachycineta bicolor (VIEILL.).

TREE SWALLOW.

PLATE XXX.

Summer resident; rare; in migration common. Begin to arrive early in March, and commence laying the last of May to first of June. The bulk leave in September, a few remaining until the last of October.

B. 227. R. 155. C. 160. G. 78, 256. U. 614.

HABITAT. The whole of North America, wintering from the Gulf coast south to Cuba and Nicaragua. Breeds from about latitude 37° north into the Arctic regions.

SP. CHAR. "Glossy metallic bluish green above; entirely white beneath. Female duller in color. Young bird dull sooty gray above, much like that of *T. thalassina*, but may readily be distinguished by the feathers of the throat being pure white to their roots, instead of having the concealed bases grayish, as in that species."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.05	13.00	4.75	2.40	.45	.30
Female . . .	5.85	12.45	4.50	2.30	.45	.30

Iris dark brown; bill and claws black; legs and feet grayish brown.

These hardy birds arrive early in the spring, but usually do not commence building their nests until about the first of June. One of the earliest nests found was on Brier Island, Nova Scotia. The pair arrived the 16th of May, 1880, and at once took possession of a hollow in a fence rail, and on the 20th, the day I left, the nest was completed and warmly lined with feathers.

They are very similar to others of the family in habits, actions and twittering notes, but are more quarrelsome, and rather slower in flight than any others that I have described, though strong and easy, flying high and low, and skimming for hours and hours, largely over the water, in quest of insects that abound there, apparently never tiring. In fact, Swallows are really only at home in the air.

Their nests are placed in Woodpecker's holes, natural cavities in trees, and about our dwellings in boxes, etc. They are very loosely constructed of fine dry grasses and leaves, and thickly

lined with downy feathers. Eggs usually four or five, .76 x .52; pure transparent white; in form, ovate or pointed oval. A set of four eggs, taken June 14th, 1883, at Pewaukee, Wisconsin, from a cigar box nailed to the side of an outbuilding, are, in dimensions: .74 x .54, .76 x .51, .78 x .52, .79 x .50.

GENUS **CLIVICOLA** FORSTER.

"Bill small; nostrils lateral, overhung by a straight-edged membrane. Tarsus about equal to middle toe without claw; feathered at upper end, especially on inner face, and having also a small tuft of feathers attached to posterior edge near the hind toe. Middle toe with basal joint adherent externally to near the end, half way internally, the claws comparatively little curved, the lateral reaching beyond the base of the middle. Tail slightly forked. Color, dull lustreless brown above; in *riparia*, white beneath, with gray pectoral bands."

Clivicola riparia (LINN.).

BANK SWALLOW.

PLATE XXX.

Summer resident; abundant in suitable locations. Arrive in April; begin laying the middle to last of May; the bulk leave in August, not later than the first of September.

B. 229. R. 157. C. 163. G. 79. 257. U. 616.

HABITAT. Northern hemisphere in general; in America, south to Brazil, and throughout the West Indies; breeding chiefly in the United States and northward into the Arctic regions; winters from about the southern borders of the United States southward.

SP. CHAR. "*Adult:* Above, grayish brown, somewhat fuliginous, with a tendency to paler margins of the feathers. Beneath, pure white, with a band across the breast, and the sides of the body like the back. Young birds have less emarginate tails, and the feathers of back, rump and wings edged with whitish."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.25	10.00	3.95	2.00	.45	.25
Female	5.00	10.25	3.80	1.90	.45	.25

Iris dark brown; bill and claws black; legs and feet dark brown.

The range of this species is almost unlimited, extending in America as stated above, and from northern Asia and Europe, south into Africa. They do not, like most of their congeners,

prefer to make their homes with man, but, from choice, more remote from his habitations. In flight they are rapid, but rather unsteady and fluttering. In their search for flies, etc., they skim low over the land and water, much like others of the tribe.

Their voice is a low, muttering twitter. They are social birds, and breed together in communities, and are, therefore, local in their distribution. They select for their breeding places the perpendicular sides of banks along the streams, or any steep embankment where the soil is sufficiently soft to enable them to excavate with their bills holes for their nests, which are usually near the top, and about three feet in depth, but in gravelly soil have been known to go great distances, or until a place free from stones overhead has been reached (this is evidently to prevent injury to their eggs or young from falling earth or pebbles), the end worked out oven shaped, and lined with fine grasses and feathers. In favorable situations the holes are near together, and in large communities the banks are honeycombed. Eggs four to six, .69 x .49 (they vary in size); pure white; when unblown have a rosy hue; in form, oval.

GENUS **STELGIDOPTERYX** BAIRD.

"Bill rather small; nostrils oval, superior, margined behind (but scarcely laterally) by membrane, but not at all overhung; the axes of the outline converging. Frontal feathers soft and (like chin) without bristles. Tarsi equal to middle toe without claw; the upper end covered with feathers all round; none at lower end. Basal joint of middle toe adherent externally nearly to end; internally, scarcely half. Lateral toes about equal, their claws not reaching beyond base of middle claw. Tail slightly emarginate; the feathers broad, and obliquely rounded at end. Edge of the wing rough to the touch; the shafts of the fibrillæ of outer web of outer primary prolonged, and bent at right angles into a short, stiff hook.

"The great peculiarity of this genus consists in the remarkable roughness of the edge of the wing (said to occur also in *Psalidoprocne*, CAB.). The object is uncertain, but is probably to enable the bird to secure a foothold on vertical or inclined rocks, among or on which it makes its nest. A favorite breeding place of *S. serripennis* is in the piers and abutments of bridges, and these hooks might render essential aid in entering into their holes."

Stelgidopteryx serripennis (AUD.).

ROUGH-WINGED SWALLOW.

PLATE XXX.

Summer resident; quite common. Arrive about the middle of April; begin laying about the middle of May; leave in bulk the last of August and first of September; a few occasionally remain as late as the first of October.

B. 230. R. 158. C. 164. G. 80. 258. U. 617.

HABITAT. United States at large (except the extreme northern border, and in the New England States only found in Connecticut); south in winter to Guatemala; breeds throughout its United States range.

"SP. CHAR. "Above, smoky brown; rather deeper on the head, perhaps a little paler on the rump. Larger quills and tail feathers dusky brown; the secondaries and greater coverts sometimes lighter along their external edges. The under parts (for about half the total length), from bill to and including breast, with the sides of body and lining of wings, mouse gray; rather lighter along the throat; the rest of under parts, including crissum, white, the latter with the shafts sometimes dusky, and very rarely with dusky blotches at the ends of the longer feathers.

"Young birds differ in a tinge of reddish fulvous on the upper parts; the wing coverts, secondaries and inner primaries margined more or less broadly with a brighter shade of the same. The gray of the under parts is also washed with this color, especially on the chin and across the breast. The hooks of the edge of the wing have not yet become developed."

Sexes alike. The following are measurements, etc., of a pair in "The Goss Ornithological Collection:"

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.50	12.25	4.40	2.10	.40	.30
Female . . .	5.20	11.50	4.05	1.95	.40	.28

Iris dark brown; bill and claws black; legs and feet dark brown.

These birds closely resemble the Bank Swallow in habits and actions, and their manner of flight and low, twittering notes are very similar. They are not so local in their distribution during the breeding season, as they nest together in smaller numbers and often in pairs by themselves. They, however, soon after assemble together in large flocks and remain a little later in the season.

They also nest in holes in the sides of upright banks, invariably along streams or over water, but they are not so deep or uniform; and often nest in holes caused by decaying roots and openings from various causes, and in crevices in abutments of bridges, etc. The place at the end, rounded out for the nest, is loosely lined with grasses and feathers. Eggs usually four or five, .73 x .52; pure white; in form, ovate or pointed oval. A set of five eggs, taken May 30th, 1882, at Pewaukee, Wisconsin; are in dimensions only: .70 x .50, .70 x .50, .70 x .50, .71 x .50, .71 x .52.

FAMILY **AMPELIDÆ**. WAXWINGS, ETC.

Legs moderate. Nostrils elongated, linear, with the frontal feathers extending close to the edge and to anterior extremity, concealing them; these feathers short, velvety and erect, with few bristles. Wings very long and pointed; outer or first primary so much reduced as to be almost inappreciable; the second nearly the longest. Wing nearly twice the length of the short, narrow, even tail. Under coverts of tail reaching almost to its tip. Secondary quills of fully adult birds with flat, horny appendages at end of shaft like red sealing wax (except in *A. japonica*). Young birds streaked beneath. Adults plain. This family as restricted contains but a single genus, *Ampelis*. The most obvious characters consist in short, broad, and rather depressed bill, with short (decidedly convex) gonys and densely feathered nasal fossa, and the wax-like appendages to the tips of the secondary quills in the adult. (*Ridgway*.)

SUBFAMILY **AMPELINÆ**. WAXWINGS.

Wings very long and much pointed, longer than the short, even tail. First primary excessively rudimentary; the outermost about the longest. Gape without bristles. Frontal feathers extending forward beyond the nostrils. Often with horny appendages like red sealing wax at end of shafts of secondaries. (*Ridgway*.)

GENUS **AMPELIS** LINNÆUS.

"Tail even. Tertiaries and secondaries with horny appendages like red sealing wax. A well-developed soft crest."

Ampelis garrulus LINN.

BOHEMIAN WAXWING.

PLATE XXX.

Winter visitant; very rare.

B. 232. R. 150. C. 166. G. 73, 259. U. 618.

HABITAT. Northern portion of the northern hemisphere; in North America, south in winter more or less regularly (in the Rocky Mountains to southern Colorado) to latitude 40°; occa-

sionally winter in small flocks a little farther south. Breed far northward.

SP. CHAR. "Crest lengthened. Body generally soft, silky brownish ashy, with a purplish cast, the wing coverts and scapulars more brownish, becoming more reddish anteriorly and ashy posteriorly; the rump and upper tail coverts, as well as the secondaries, being nearly pure ash. Anteriorly the color passes gradually into deep vinaceous chestnut on the forehead to behind the eye and on the cheeks; abdomen yellowish white; lower tail coverts deep chestnut. A stripe on side of the head, covering the lores and nasal feathers (scarcely meeting across the forehead), involving the eye, and continued back toward the occiput and beneath the crest, with a large patch covering the chin and throat, deep black; a narrow crescent on lower eyelid, and a short stripe between the black of the throat and that of the chin at the base of the lower mandible, two very broad bars on the wing, one across ends of primary coverts, and the other across ends of secondaries (the first occupying both webs, and the latter the outer), white. Primary coverts, primaries and tail slaty black, the latter growing gradually ashy basally. A broad band across the end of tail, and a longitudinal space along end of outer web of primaries, gamboge yellow—the marks on primaries, however, sometimes white, only stained with yellow. Each of the secondaries with an expanded continuation of the shaft, in form of flattened, very thin, somewhat elliptical appendages, of a bright vermilion red, resembling red sealing-wax, with the white of outer web of primaries continued around end of inner webs."

The following are measurements, etc., of a pair in "The Goss Ornithological Collection:"

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.40	14.20	4.70	2.80	.85	.45
Female . . .	8.25	13.90	4.60	2.70	.85	.45

Iris brown; bill, legs, feet and claws black.

These birds, of elegant plumage, are very social, and live and wander about together in flocks, except during the breeding season. A very irregular winter sojourner or visitant, here to-day, there to-morrow. From my observation (in winter), they are rather silent when at rest; only real noisy on the wing, or as they flutter in the trees and bushes in search of berries, etc. I say flutter, for at such times the rear ones are continually rising and passing over the others, and alighting a little ahead—like the Piñon Jay—uttering, as they fly, a "Zee, zee-ze" note, that, coming from the throats of many, sounds quite loud and chattering. In their regular flights, they are steady and strong, but only moderately swift.

Their food consists chiefly of fruits and berries (the juniper and mountain ash berries the favorite). Insects, in their season, help to make up their bill of fare, and they catch them readily upon the wing.

They are not naturally wild or timid; tame easily, and make handsome cage birds. I can find no mention of a song, by writers that have met with them in their summer homes; but they are so friendly and attentive to each other, at all times, that I think they must, in the early mating season, express their love and joy in song; probably, like their cousins, the Cedar Waxwings, in so low and lisping a manner as not to be heard over twenty yards away.

Their nests are said to be placed on the branches of trees, from six to about twenty feet from the ground; a rather bulky, compact structure, composed of twigs, strippings of bark, rootlets, leaves, stems of grasses, and sometimes lichens and mosses, and lined with fine rootlets, grasses and feathers. Eggs three to five. They vary in dimensions, as given by American writers, from .90x.65 to 1.00x.67; bluish white to purplish gray, spotted with lilac and dark brown to black, thickly set about the larger end; in form, oval. A set of four eggs, in my brother's collection, taken in Labrador, June 18th, 1885, are: .98x.70, .99x.70, 1.05x.69, 1.06x.70.* (Average of European eggs: 1.00x.69 to .70.)

***Ampelis cedrorum* (VIEILL.).**

CEDAR WAXWING.

PLATE XXX.

Resident; irregular; some years common, others rare. Begin laying about the last of June.

B. 233. R. 151. C. 167. G. 74. 260. U. 619.

HABITAT. The whole of temperate North America; south in winter to Guatemala and the West Indies. Breeds nearly throughout its summer range.

SP. CHAR. Crest moderate. General color soft vinaceous cinnamon, deepest anteriorly, more olivaceous on back, scapulars and wing coverts; passing

* The average differences as given are so great, that I am inclined to think there must be some mistake in the identification, and that the smaller sets may prove to be the eggs of *A. cedrorum*.

into pure light ash on the rump and upper tail coverts, and into dingy yellow on flanks and abdomen. Lower tail coverts white. Whole of the wing posterior to the greater coverts slaty ash, almost black along end of inner webs of primaries, the outer webs of which are narrowly edged with hoary whitish. Tail slate, passing into black terminally, tipped with a broad, sharply-defined band of gamboge yellow. A broad stripe of intense velvety black on side of head starting from nostril, passing across lores, and involving the eye, continued from it beneath the crest to the occiput; chin dull black, blending gradually into the brownish of the throat. A narrow white line across the forehead and along the sides of crown, between brown of crown and back lores, etc.; a narrow crescent on lower eyelid, and a stripe between black of lores and that of the throat, white. Fully adult male and female with each secondary quill terminated by a bright red horny appendage to the shaft. Younger birds with these very small and few in number, or entirely absent. *Young:* In general appearance similar to the adult. Colors more grayish, with indistinct concealed whitish streaks on nape and down back, these stripes becoming very conspicuous on the sides and flanks and across breast. No black on chin. Rump grayish brown; abdomen and flanks dingy whitish. No appendages to secondaries, and the yellow band across end of tail narrower than in adult. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.10	11.75	3.80	2.50	.67	.44
Female . . .	7.00	11.50	3.70	2.45	.66	.42

Iris brown; bill, legs, feet and claws black.

These handsome roving birds frequent in flocks the woods, orchards and groves. They were formerly abundant in suitable localities throughout their range, but their love for berries and fruits is causing their ranks to be thinned by the murderous shot-guns. As they feed together in large numbers, their presence to fruit growers is alarming, and it is hard to convince them that, in ridding their orchards of the various forms of injurious insects, they are more beneficial than hurtful. Doctor Brewer, in "North American Land Birds," says:

"It is unfortunate for the horticulturist that this bird has done so much to merit his prejudices and reprobation, and that he does not appreciate to the full the immense services it renders to him each spring in the destruction of injurious insects. A flock of these birds will, in a short space of time, devour an immense number of the larvæ of the destructive canker worms (*Phalænæ*) that infest the apples and elms of Massachusetts, and, if permitted, would soon greatly reduce their numbers.

But these prejudices cannot be softened by their good deeds, and the Cherry Bird is still hunted and destroyed."

In flight they are strong and graceful, and glide with ease through the woodlands as they sweep about in quest of food. They are generally spoken of as birds without a song, and their feeble attempt is hardly worthy to be called one; they do, however, at times, utter low, warbling notes, with tremulous wings, in a manner expressive of love and joy; in sound very similar to their lisping call notes, but much softer. It is evidently not intended for outsiders, for its voice is scarcely audible twenty paces away.

The birds at all times are social and friendly, and during the breeding season the mated pairs are very attentive to each other; and while they often select a nesting place in an exposed situation, they are, as a rule, so silent and secretive that their presence is rarely known, except to the egg hunters. They nest late in the season, in order that the berries may be ripening at the time of hatching, for their young are reared upon fruits as well as insects; the latter are often captured upon the wing.

Their nests are built in low trees (apple and cedar the favorites), sometimes in bushes; a deep, bulky structure, composed of twigs, stems of weeds, grasses, and coarse fibrous strippings from vines and plants, and is lined sparingly with leaves and fine rootlets. Eggs usually four, .85x.60; pale clay white, with an olive or bluish hue and purple shell stains, and thinly spotted with varying shades of brown—chiefly blackish, usually aggregating thickest about the larger end; in form, oval to ovate.

FAMILY LANIIDÆ. SHRIKES.

"Bill very powerful, strong, and much compressed; the tip abruptly hooked, deeply notched, and with a prominent tooth behind the notch; both mandibles distinctly notched, the upper with a distinct tooth behind, the lower with the point bent up. Tarsi longer than the middle toe; strongly scutellate. Primaries ten; first primary half the second, or shorter (occasionally wanting). Wings short, rounded; tail long, and much graduated. Sides of the tarsi with the plates divided on the outside.

"Of this family, only a single genus is known in North America."



PLATE XXXI.

1. NORTHERN SHRIKE; Male.
2. Female.
3. WHITE-RUMPED SHRIKE; Male.
4. Female.
5. RED-EYED VIREO; Male.
6. WARBLING VIREO; Male.
7. YELLOW-THROATED VIREO; Male.
8. BLUE-HEADED VIREO; Female.
9. BLACK-CAPPED VIREO; Male.
10. Female.
11. WHITE-EYED VIREO; Male.
12. BELL'S VIREO; Male.
13. BLACK AND WHITE WARBLER; Male.
14. Female.
15. PROTHONOTARY WARBLER; Male.
16. Female.
17. WORM-EATING WARBLER; Male.
18. BLUE-WINGED WARBLER; Male.
19. NASHVILLE WARBLER; Male.
20. ORANGE-CROWNED WARBLER; Male.

GENUS **LANIUS** LINNÆUS.

"Feathers of forehead stiffened; base of bill (including nostrils) covered by bristly feathers, directed forward. Bill shorter than the head, much compressed, and very powerful. Culmen decurved from base; the mandible abruptly bent down in a powerful hook, with an acute lobe near the tip. Tip of lower mandible bent upwards in a hook; the gonys very convex. Rictus with long bristles. Legs stout; the tarsi rather short, and longer than the middle toe; the lateral equal; the claws all very sharp and much curved. Wings rounded; the first primary about half the second, which is equal to sixth or seventh. Tail longer than the wings, much graduated, the feathers broad."

Lanius borealis VIEILL.

NORTHERN SHRIKE.

PLATE XXXI.

Winter sojourner; quite common. Arrive early in November; leave in March.

B. 236. R. 148. C. 186. G. 70, 261. U. 621.

HABITAT. Northern North America; south in winter to about latitude 35°; breeds north of the United States, and occasionally in the higher mountain regions of the latter.

SP. CHAR. *Adult:* Above, clear bluish ash, blanching on the rump and scapulars; below white, always vermiculated transversely with fine wavy, blackish lines; a broad black bar along side of head, not meeting its fellow across forehead; interrupted by a white crescent on under eyelid, and bordered above by hoary white, that also occupies the extreme forehead; wings and tail black, the former with a large white spot near base of the primaries, and white tips of most of the quills, the latter with the outer web of the outer feathers edged, and all the feathers except the middle pair broadly tipped, with white, and with concealed white bases; bill and feet bluish black; eyes blackish. *Young:* The colors much less pure and clear. Above, grayish brown, scarcely or not whitening on the scapulars, tail coverts and forehead. The younger the browner, sometimes almost with a rusty tinge; grayer according to age. Below brownish white (the younger the browner), the wavy dark markings stronger than in the adult; the bar along the head poorly defined, merely dusky, or quite obsolete. Wings and tail brownish black, with less white than in the adult. Bill plumbeous brown, flesh colored at base below. At a very early age, the upper parts are probably vermiculated somewhat like the lower, as in the same stage of *L. ludovicianus*; but this state I have not observed. In old age the dusky vermiculation of the under parts is much diminished, but I have never seen it absent altogether. This feature, coupled with the particular character of the head markings and the large size and comparatively short tarsi, will always distinguish this species from *L. ludovicianus* or *excubitorides*. (Coues.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.00	14.60	4.60	4.60	1.05	.70
Female . . .	9.80	14.40	4.50	4.45	1.02	.70

Iris dark brown; bill horn color, dark at tips (of one specimen blackish), with base of under mandible bluish white; legs, feet and claws black.

These birds, noted for their cruelty and rapacity, frequent the edges of woodlands, orchards and hedges, where they are a terror to the smaller birds, occasionally giving chase, but as a rule watch silently from a perch, and pounce with unerring certainty upon their unsuspecting prey. In the warmer months they feed largely upon beetles and grasshoppers, but with us, upon birds and mice. They not only kill to sustain life, but for pure "cussedness;" for, after satisfying their hunger, they take delight in impaling their victims on thorns, sharp-pointed twigs, etc., and sometimes draw and push them under splinters on fence rails. It also affords them the greatest pleasure to tease and frighten the birds, and in order to draw them near, occasionally mimic one in distress. They boldly enter the door-yards, and have been known to attack cage birds, not only when hanging upon the outside of houses, but within. In the cities they are beginning to turn their attention to the English Sparrow, as they are much easier to capture than our native birds. In their flights they are not regular, but usually keep near the ground, and sweep through the air in an undulating, but strong and easy manner. Their ordinary notes are harsh and squeaky. Mr. Nelson, in his "Report upon Natural History Collections in Alaska," gives the following description of their song:

"While at the Yukon mouth the last of May, 1879, I had the good fortune to observe this bird several times, and also to hear its song. In May, 1879, while the ground was still largely covered with snow, I was passing through a thicket where the winter's drifts still lay deep enough to half bury the bushes, when suddenly a low, soft, musical whistle, consisting of half a dozen liquid trills, ending in two or three strange grating notes, fell upon my ear. After a slight pause this was repeated, and with some difficulty, a moment later, I made out the indistinct form of a bird close to the ground in a dense bush, about twenty yards in advance, where it had evidently concealed itself on my approach. I hastily fired into the bush to secure, as I sup-

posed, some rarity, and hurrying forward to gain the prize, was more surprised than pleased to find nothing but an ordinary Shrike. On another occasion, I was led a long chase through a piece of tangled wood, bordering on one of the Yukon channels in the delta, by some strange and musical notes unlike anything I had ever heard before, which appeared to be uttered close at hand, and a moment later to be far away. After considerable time, as the wood became more open, the author of these notes was found skulking from tree to tree, in advance, and a long shot brought down another Shrike."

Their nests are usually placed in bushy or thorny trees; a rude, bulky structure, composed of twigs, grasses and stems, and warmly lined with mosses, lichens and downy feathers. Eggs four to six, 1.07x.78; pale bluish green, spotted and blotched with purple, brown and lilac; in form, oval or ovate.

Lanius ludovicianus LINN.

LOGGERHEAD SHRIKE.

This species is entered on the authority of Prof. F. H. Snow, who states in his catalogue of the birds of Kansas that "several typical specimens of this southern form have been taken." This bird has not come under my observation in the State. Its natural home is in the south Atlantic and Gulf States, east of the Mississippi River. It occasionally wanders northward, and Kansas is without doubt its extreme western limits, where it can only be safely entered as a straggler.

B. 237. R. 149. C. 187. G. 71, 262. U. 622.

HABITAT. "Florida, the Carolinas and the Gulf States east of Texas." (*Check List of N. A. Birds.*) "More southern portions of eastern United States, but north irregularly to Ohio, Vermont, etc.; regularly to Virginia and southern Illinois." (*Ridgway.*)

SP. CHAR. *Adult:* Above, slate colored, slightly whitish on upper tail coverts and end of scapulars; below, white, sometimes a little ashy shaded, but no wavy black lines, or only a few slight ones; white on wings and tail less extensive than in *borealis* or *excubitorides*; black bridle meeting its fellow across forehead, not interrupted by white on lower eyelid, scarcely or not bordered above by hoary white. *Young:* Differing from the adult much as young *borealis* does,

and decidedly waved below, as in that species; but the size and other characters are distinctive. (*Coues.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.75	12.50	3.90	4.00	1.02	.65
Female	8.50	12.15	3.65	3.75	1.00	.62

Iris dark brown; bill, legs, feet and claws black.

I have occasionally met with these birds in Florida, usually about the settlements and natural openings or clearings in the woodlands, but, as my observation is confined to the winter months, I take pleasure in quoting from "Birds of Illinois" Mr. Ridgway's interesting description of their habits, etc.:

"It is partial to those more open localities where there are hedgerows or plenty of low, thorny trees, preferable the honey locust (*Gleditschia triacanthos*), wild crab apple, or trees of like character. These seem indispensable to its presence, for the reason that the slender, sharp-pointed thorns are required for impaling its prey, and the matted, impenetrable covert for concealment or protection of its nest.

"Notwithstanding the fact that this species occasionally kills and devours small birds, it is of great benefit to the farmer, from the fact that it destroys large numbers of grasshoppers and field mice. The habit of impaling its victims on thorns is one common to the whole family of Shrikes, and also one that has not been satisfactorily explained, for it seems that objects so impaled are seldom touched by the birds afterward. It has been suggested that the bird improves every opportunity to procure food, and when not needing it impales it to provide for an emergency; and that, when fresh food is readily obtained, it is preferred. This may be the true explanation, but we think a more plausible one may be found.

"In the protection of its young, no bird displays greater courage or more affectionate solicitude for its offspring. I have repeatedly, when I have climbed to a nest containing young, had the parent birds alight within my reach, and retreat only when I had attempted to grasp them, all the while they were greatly excited with anger, and were there an opportunity to do so without being seen, would actually bite my hand. During such oc-

casions they keep up a peculiar crackling sound, mingled with a sonorous 'Qua a-a, qua a-a.'

"The notes of this species are exceedingly varied; so much so, in fact, that it is confounded by many people with the Mockingbird, although this is, perhaps, as much on account of the general similarity of their plumage as for any other reason. Some of the notes are soft and musical, but most of them are harsh, that most frequently heard resembling the creaking of an ungreased wheelbarrow or rusty gate hinge. It is supposed that it imitates the notes of smaller birds, in order to entice them within reach.

"When taken from the nest and reared in captivity, the Loggerhead Shrike makes a most affectionate and interesting pet. It becomes so perfectly tame as not to require the restraint of a cage, but will follow its keeper about the fields, and seeks his companionship with all the intelligence and devotion of a dog.

"While watching for its prey, the Shrike occupies a prominent perch, the summit of a small tree in the midst of a field or common, sitting 'bolt upright' and scanning carefully the surroundings in every direction. Its flight is very peculiar; on leaving the perch it sinks nearly to the ground, describing a curve as it descends, and passing but a few feet above the surface, ascending in the same manner to the object on which it next alights. The flight is performed in an undulating manner, the bird sustaining itself a short time by a rapid fluttering of the wings, and sinking as this motion is temporarily suspended. While flying, the white patch on the wing is very conspicuous.

"The very bulky nests of this species are usually placed in thorny trees, or in those having a dense canopy of vines. At Mount Carmel, however, I have frequently found them in apple trees. They are composed largely of wool and feathers. When built in young trees of the honey locust, where it is absolutely impossible to reach them by climbing, they are often poked from their position out of spite by the 'small boy,' with poles or fence rails."

Their eggs, four to six in number, are similar in size, color and form to the eggs of the White-rumped Shrike; in fact, cannot be distinguished from them.

Lanius ludovicianus excubitorides (SWAINS.).

WHITE-RUMPED SHRIKE.

PLATE XXXI.

Summer resident; occasionally lingers into winter. Arrive early in the spring; begin laying about the first of May.

B. 238. R. 149*a*. C. 188. G. 72, 263. U. 622*a*.

HABITAT. The central regions of North America, north to the Saskatchewan, southwesterly to Lower California, and over the table lands of Mexico; occasionally stragglers in the States far eastward.

SP. CHAR. *Adult:* Leadен gray or light slate color, whitening on the scapulars and upper tail coverts. Beneath, white, slightly shaded with the French gray on the sides, but without dusky vermiculation. A narrow stripe across the forehead, continuous with a broad bar along the side of the head, embracing the eye, black, slightly (if at all) bordered with whitish. Lower eyelid not white. Wings and tail black, with white markings, much as in the last species. *Young:* Vermiculated below with dusky, upon a brownish ground, about to the same extent as is seen in very old examples of *L. borealis*. General tone of the upper parts less pure than in the adult; scapulars and tail coverts not purely white; black bar of head less firm, but, as far as it goes, maintaining the characters of the species. At a very early age, the upper parts (including the whitish of the scapulars and tail coverts) are finely vermiculated with dusky waves. The ends of the quills, wing coverts and tail feathers often have rusty or rufous markings. Extreme examples of *excubitorides* look very different from *ludovicianus* proper, but the two are observed to melt into each other when many specimens are compared, so that no specific character can be assigned. (*Coues.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	9.00	12.75	3.90	4.00	1.05	.63
Female . . .	8.70	12.25	3.70	3.70	1.02	.61

Iris brown; bill, legs, feet and claws black.

This pale race of the Loggerhead Shrike is similar to it in habits and actions, and, like it, occasionally kills small birds and mice, but feeds almost wholly upon grasshoppers, beetles and crickets. It also has the habit of the family of impaling its victims on thorns, etc., but less frequently than the Northern Shrike. Its ordinary voice is harsh and creaking. It has, however, considerable talent in the way of mimicry, especially in uttering the notes of birds in distress; and, during the early mating season, I have occasionally heard it sing from a perch a rather pleasing, musical song, interrupted at times with its harsh, grating notes.

Its nest is placed in thorn trees, hedges, briars, etc.; a rough, bulky structure, composed of small sticks and stems, with bits of leaves, wool, feathers and other soft, fragmentary substances sparingly woven in, and lined with fine stemlets of weeds and grass, and sometimes with hairs. Eggs four to six, $1.02 \times .73$; dull grayish to yellowish white, spotted with varying shades of brown and obscure lilac, more or less confluent at the larger end; in some cases thickly spotted and blotched over the entire surface, so as to nearly conceal the ground color; in form, oval. A set of five eggs, taken June 5th, 1878, at Pewaukee, Wisconsin, from a nest in a small thorn tree, are, in dimensions: $1.00 \times .72$, $1.01 \times .75$, $1.02 \times .75$, $1.03 \times .73$, $1.05 \times .73$.

FAMILY VIREONIDÆ. VIREOS.

"The essential features of this family seem to consist in the combination of the dentirostral bill, notched in both mandibles; the ten primaries (except *Vireosylva*), of which the outer is usually from one-fourth to one-half the second, the rather short, nearly even tail, with narrow feathers, and the great amount of adhesion of the anterior toes—the whole basal joint of the middle being generally united on both sides to the adjacent joints, and decidedly shorter than the basal of inner or two basal of outer. The outer lateral toe is generally appreciably longer than the inner, reaching considerably beyond the base of the middle claw. The tarsi are always distinctly scutellate anteriorly. The young are never spotted or streaked as in the Thrushes; nor, indeed, do the adults exhibit such markings.

"The *Vireonidæ* are peculiar to the new world, and are widely distributed, although but one genus belongs to the United States."

GENUS VIREO VIEILLOT.

Wing equal to or longer than tail, less rounded, the third or fourth quill longest, and second much longer than secondaries; tail nearly even, or if rounded, the difference between longest and shortest feathers much less than length of bill from nostril; bill stouter, and relatively narrower and higher at base. (*Ridgway*.)

SUBGENUS VIREOSYLVA BONAPARTE.

"Wings long and pointed, one-third or one-fourth longer than the nearly even or slightly rounded tail. First quill very small (less than one-third the second), sometimes apparently wanting. Second quill longer than the seventh, much longer than the secondaries. Tarsi short (scarcely exceeding .70 of an inch); toes rather long. Body slender and elongated. Bill slender, narrow, straight; the culmen straight for its basal half, the commissure quite straight; light horn color, paler beneath. Feet weak."

Vireo olivaceus (LINN.).**RED-EYED VIREO.**

PLATE XXXI.

Summer resident; abundant in the eastern part of the State. Arrive the last of April; begin laying about the 20th of May; the bulk return early in September, a few remain until the first of October.

B. 240. R. 135. C. 170. G. 64. 264. U. 624.

HABITAT. Eastern temperate North America; west to the Rocky Mountains; south in winter through eastern Mexico to northern South America; occasionally winters as far north as Florida. Breeds chiefly from the southern United States northward.

SP. CHAR. "Upper parts olive green. Top of head, from bill to nape, ash color. A white line from nostrils above and beyond the eye, bordered above by a dusky line forming the edge of the ashy cap, and below by a similar, perhaps paler, loreal and postocular cheek stripe. Beneath, including tibia, white, with perhaps a tinge of olivaceous ash across the breast; the sides of the neck like the back; sides of the body with a faint wash of olive. Axillars and crissum faintly tinged with sulphur yellow; lining of wings and its edges, the latter especially, nearly white. Quills blackish brown, edged externally, except at ends of primaries, with olive, internally with white. Tail feathers lighter brown, edged externally like the back; internally with pale olivaceous white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.10	9.75	3.20	2.50	.70	.53
Female . . .	5.60	9.20	3.00	2.20	.70	.50

Iris brick red; bill bluish black, under pale horn color at base; legs, feet and claws plumbeous.

These birds occasionally frequent the groves and shade trees about our dwellings, but their natural haunts are within the woodlands, and they are the most abundant along the timbered streams. They are very common throughout their range, and make their presence known by their song, as it is often repeated at all times of the day, from the time of their arrival until late in autumn, but in the latter part of the season it is less animated and not so often heard. They sing from the topmost branches of the trees—an indescribable song, consisting of a few clear, warbling notes, repeated in a loud, animated and almost continu-

ous strain, and in so musical a manner as to be ever pleasing and never tiresome.

Like all of the family, they feed upon insect life, for which they industriously hunt among the branches and leaves, and they are quite expert in catching upon the wing. Small berries in their season are also relished as a dessert. In flight they glide through the air rather swiftly, and in an easy, steady manner.

Their prehensile nests are suspended from the forks or twigs of trees, and are made of and fastened at the rim to and around the twigs with lint-like fibers, shreds from weeds, vines, bits of old leaves, spider threads, and cocoons, woven in and fastened together with saliva, and lined with hair-like stems and rootlets; to be looked for anywhere from the lowest branches to near the tops of the tallest trees. Eggs three to five (usually four), .82x.56; pure white, thinly and irregularly specked with reddish brown, chiefly about the larger end; in form, oval.

Vireo gilvus (VIEILL.).

WARBLING VIREO.

PLATE XXXI.

Summer resident; common in the eastern part of the State. Arrive the last of April; begin laying about the 20th of May; leave in September.

B. 245. R. 139, 139a. C. 174, 175. G. 65, 265. U. 627.

HABITAT. North America in general, from the fur countries to Mexico; breeding from the southern United States northward throughout their range. (The western form, *V. gilvus swainsoni*, has not been recognized by the A. O. U. committee; the difference upon which the variety was based not appearing to them to be constant. Mr. Ridgway has since restored it in his "Manual." I have not material enough at hand to venture an opinion, and will only say to the reader, if finally reinstated as a race, that it does not differ in its habits and actions in the least from this species, and its nest and eggs are not distinguishable.)

SP. CHAR. "Above, olive green, strongly glossed with ashy; the head and nape above more distinctly ashy, but without decided line of demarcation behind and without dusky ridge; rump pure olive. Stripe from nostril over eye

to nape, eyelids and space below eye creamy white. A rather dusky postocular and loreal spot, the latter not extending to the bill. Under parts white, with tinge of greenish yellow (occasionally of creamy fulvous or buff), especially on breast; sides more olivaceous. Crissum and axillars scarcely more yellowish. Quills and rectrices wood brown, edged internally with whitish, externally with olivaceous, except perhaps on longer primaries. Edge of wing white. Larger wing coverts grayish brown, with paler edges, and no trace of olivaceous. First quill very short or spurious; second about equal to, generally rather longer than, sixth; third longest; fourth, then fifth a little shorter."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.75	9.10	2.75	2.20	.70	.40
Female . . .	5.50	8.85	2.60	2.00	.68	.40

Iris brown; bill—upper dusky, under pale; legs and feet plumbeous; claws brown.

These familiar birds inhabit the groves, orchards, parks and shade trees about our dwellings. They are, I think, the sweetest songsters of the family, and nearly as constant singers as the Red-eyed, and their soft, warbling, musical notes much more varied. They are great favorites, not only on account of their musical talent, but for their valuable services in ridding the fruit and shade trees of the many injurious insect pests, that are so destructive to the foliage and fruit.

Their nests, like those of the Red-eyed, are suspended to the slender forks of twigs, and are composed of about the same material, but smoother and more compact in their make-up. They usually build from twenty to even one hundred feet from the ground. (I once found a nest only seven feet up, but, in the vicinity of taller trees, such finds are rare.) Eggs four or five, .75 x .55; crystal white, sparingly spotted about the larger end with reddish and dark brown, intermingled with lilac; in form, oval.

SUBGENUS LANIVIREO BAIRD.

"Body stout; head broad. Bill short and stout, broad at base, the culmen curved from the base, the commissure considerably arched."

Vireo flavifrons VIEILL.

YELLOW-THROATED VIREO.

PLATE XXXI.

Summer resident; quite common in the eastern part of the State. Arrive the last of April to first of May; begin laying

about the 20th of May; the bulk leave early in September; a few occasionally linger into October.

B. 252. R. 140. C. 176. G. 66. 266. U. 628.

HABITAT. Eastern United States, occasionally crossing the line into the British possessions; south in winter through eastern Mexico, to Costa Rica. I found them quite common in Guatemala. Breed throughout their United States range.

SP. CHAR. "Head and neck above and on sides, with interseapular region, bright olive green. Lower back, rump, tail and wing coverts ashy. Wings brown, with two white bands across the coverts, the outer edges of inner secondaries and inner edges of all the quills, with inside of wing, white. Outer primaries edged with gray, the inner with olive. Tail feathers brown, entirely encircled by a narrow edge of white. Under parts to middle of body, a line from nostrils over eye, eyelids, and patch beneath the eye (bordered behind by the olive of neck), bright gamboge yellow; rest of under parts white, the flanks faintly glossed with ashy. Lores dusky. No spurious primary evident; second quill longest; first shorter than third.

"Autumnal birds, perhaps more especially the young, are more glossed with olivaceous, which invades the ashy portions and tinges the white."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.75	9.60	3.10	2.20	.75	.50
Female	5.60	9.40	3.00	2.10	.75	.48

Iris brown; bill—end dusky, rest bluish; legs, feet and claws lead color.

These handsome birds frequent the woods, and seem to prefer the timbered lands along the streams; at least, this is the case in their western range. In the Eastern States they are said to be quite a familiar bird, and to inhabit alike the orchards and shade trees; and, as they are not wild or timid, will no doubt soon become accustomed to the presence of man, and readily make their homes about our prairie dwellings, as soon as the trees and shrubbery form inviting haunts; at any rate, they are much more common here than in former years.

In flight they are less steady and not so swift as the Red-eyed. Their food habits are the same, but they look more for the supply among the foliage in the treetops. Their song is not so constant, and is delivered in a slower and more plaintive strain, but in a very clear and musical manner. Among the Vireos they rank next to the Warbling in song.

In regard to their nesting habits I will say, that on the 9th of May, 1877, I found, in the timber near Neosho Falls, Kansas, a nest of this bird (a pendent one, as all Vireos' nests are) attached to branches of a very small horizontal limb of a large hickory tree, about twenty feet from the ground, and ten feet below the limbs that formed the top of the tree. In the forks of the tree the Cooper's Hawks were nesting, and I discovered the Vireo and its nest in watching the Hawks—or rather the man I had hired to climb the tree to the Hawks' nest. The little bird at first flew off, but on his near approach returned and suffered him to bend the limb toward the tree and cover her with his hand on the nest. The twig was quickly broken, and the bird and nest lowered by a line in a small covered basket, taken to collect the eggs of the Hawk. Such manifestations of courage and love, so rare and exceptional, touched me to the heart, and it was hard to make up my mind to rob and kill the bird and her mate, scolding in the treetop. I can only offer in extenuation that they were the first I had ever met with in the State, and the strong desire to have them in my collection. The nest was made of and fastened to the limb with silk-like threads and bits of cotton from plants, fastened together by saliva, and partly covered or dotted over with lichen, and lined with small stems of weeds and grass. The beautiful nest was in plain sight, there being nothing near to hide it from view. It contained three eggs and also one of the Cowbird (*Molothus ater*). One of the eggs was broken by the bird in her struggle to escape from the collector's grasp while in the nest. The color of the eggs was pure white, with a few scattering small spots of reddish brown toward the larger end. They each measure .79x.58. Four taken from another nest (a full set) measure: .78x.57, .80x.58, .79x.58, .78x.57.

I have since noticed these birds in the woodlands on several occasions, and on the 18th of May, 1883, while strolling along the south bank of the Kansas River, near Topeka, in the timber skirting the stream, I had the pleasure to find a pair of them building a nest in a honey locust, about sixteen feet from the ground, and eight feet from the body of the tree. The nest

was fastened to the forks of a small horizontal branch. The frame of the nest appeared to be completed. The birds were busy at work, the female lining the nest with small, hair-like stems, the male covering the outside with soft, lint-like fibrous strippings from plants (these closely resembling the limb and its surroundings), and dotting it over with lichen. Happy in the thought that he was not only beautifying the home of his lady bird, but protecting her from view by his artistic skill (notwithstanding the fact that she had selected an open and exposed situation, he could not refrain from expressing his joy, at intervals during the work, in snatches of his sweetest notes. The female, more watchful, sighted me, and gave notice of the intrusion. Quick as thought, the birds were away. The male, alighting near the top of an adjoining tree, at once poured forth his song in loudest notes, no doubt thinking that by attracting my attention to him, I would lose sight of the nest. Knowing it was now too late for concealment, and that any attempt to hide away would only increase their suspicions, and stop or delay the work, I carelessly walked nearer, in order to have a better view, and lay down on my back in an open space. In a short time the female returned, hopped about the tree, inspected me closely from the lower limbs, and then flew away and returned several times, before bringing material, or venturing to approach the nest. But the moment she did so, the song of the male ceased, and the work of building was actively resumed. As the female stood upon the top of the nest, with head down and inside, I could not see the manner of arranging the lining; but as she kept walking around upon the rim, I could, in imagination, see her plaiting and weaving in and out the hair-like stems. It was very easy and interesting, however, to see and note the actions of the male, as he deftly worked the material into the framework, running the longer, fibrous, thread-like strips through, and then quickly springing upon the top, and fastening them on the inside. Then he would rearrange the outside, stopping a moment to inspect the work, and then off in search of more material, occasionally warbling a few notes on the way; but he was silent at the nest, while I remained so near. At the rate their

work was progressing, I think the nest would have been completed during the day. I do not know that it is the usual custom for the female to confine her labors to the plain and necessary work, and the male to the decorative and ornamental parts, but it was so in this case. It may be that the time of laying was near at hand, and that the female felt the pressing necessity for the completion of the interior; for, in such cases, I have seen nests of birds enlarged and completed by the males, while the females were sitting upon their treasures.

Eggs three to five, usually four; in form, oval.

Vireo solitarius (WILS.).

BLUE-HEADED VIREO.

PLATE XXXI.

Migratory; rare. Arrive the last of April to first of May; leave on the way southward by the last of September.

B. 250. R. 141. C. 177. G. 67, 267. U. 629.

HABITAT. Eastern North America; north to Hudson's Bay and Great Slave Lake; south in winter through eastern Mexico to Guatemala; breeds chiefly north of the United States.

SP. CHAR. "Above olive green, including upper tail coverts; the top and sides of head and nape ashy plumbeous; sides of the neck plumbeous olive; broad line from nostril to and around eye, involving the whole lower eyelid, white; a loreal line involving the edge of the eyelid, and a space beneath the eye, dusky plumbeous; beneath white; the sides yellow, overlaid with olive, this color not extending anterior to the breast; axillars and base of crissum pale sulphur yellow, the long feathers of the latter much paler or nearly white; wings with two bands and outer edges of innermost secondaries olivaceous white; the quills dark brown, edged externally with olive green, internally with white; tail feathers similarly marked, except that the lateral feather is edged externally also with white, the central without internal border. First quill spurious, rather more than one-fifth the second, which is intermediate between the fifth and sixth; third longest.

"Spring specimens show sometimes a gloss of plumbeous on the back, obscuring the olive, the contrast of colors being greater in the autumnal and young birds; sometimes the crissum appears nearly white. The length of the spurious primary varies considerably, from .45 to .75 of an inch.

"In autumn the colors are similar, but slightly duller and less sharply defined, while the back is considerably tinged with ashy."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.50	9.50	3.00	2.30	.70	.42
Female . . .	5.40	9.25	2.90	2.25	.70	.40

Iris dark brown; bill black, with basal half of under blue; legs, feet and claws slate blue.

These solitary birds inhabit the deep woods, and seldom frequent the open grounds or habitations of man, and are therefore but little known, except by the bird lover. In their food habits and actions, they are very similar to the Red-eyed. I have never been so fortunate as to meet with them on their breeding grounds, and therefore take pleasure in quoting from Mr. Gentry's interesting description of their nesting habits, etc., in his "Life Histories of Birds of Pennsylvania." He says:

"Although affecting a partiality for retired situations, it cannot be considered a shy and timid species. Like many others have done, as time advances it will become more familiar with man. It is but three years ago since we first met this species in this part of the country in anything like great numbers. Last spring it was nearly as abundant as *Vireo olivaceus*. As the forests disappear, and new conditions are imposed upon its environment, a change of nidification will be the inevitable result.

"From observations extending over three years, we are satisfied that the sexes arrive together. The females, being more modest and retired than their mates and comparatively songless, are less observed. In less than a fortnight after their arrival, a site is chosen for a nest, which is a matter of some moment. After a couple of days thus spent, a place is mutually agreed upon, and nidification at once begun. This happens about the 20th of May, and sometimes as late as the 10th of June; about the time, usually, when *Quercus palustris* has doffed its ripened catkins, which are principally utilized in the construction of its nest. Each nest is uniform in structure, and remarkably homogeneous in composition: where the tassels of the pin oak are used, nothing else is to be found; where grass is the favorite article, as a species of *Aira* in exceptional cases, this alone is a noticeable feature.

"The nest is gracefully disposed between the bifurcating branches of a twig, and presents a neat and cozy appearance. The interior is comparatively even, and strictly symmetrically

cup-shaped. The exterior, with its roughened aspect, produced by the projecting catkins, is a rather imposing sight.

"The female adjusts the materials while the male is busy in fetching them. On the completion of the structure, which is the work of three days, the female, on the succeeding day, begins to deposit, at the rate of one egg per day, her complement of eggs, which requires from three to four days, according to the number laid. On the ensuing day incubation takes place and continues from ten to eleven days, and is the sole labor of the female. While thus occupied, the male, like a dutiful husband, supplies her with nourishment.

"Like its near congeners, the female of this species is very unsuspicious, and lacks timidity. Persons may pass and repass underneath the nest, which is mostly placed ten feet from the ground, without exciting distrust or creating alarm. But when an effort is made to violate this confidence by hostile intentions, the female glides silently out of the nest and does not exert herself in the least to ward off an attack; but the male, when not absent on foraging business, is close by the nest and ready by his valor to resent an injury or deter an assault. With open bill and vehement scolding, he hazards his own life.

"Its song differs from that of any other Vireo. It is a protracted and peculiar ditty, which is heard at irregular intervals, and begins with an animated warble, which gradually increases in sound until a certain pitch is attained, when it breaks down to a falsetto note, then rises again, and ultimately ceases.

"The eggs are five in number, oblong oval, and slightly pointed at one end; the ground color is a transparent white, flesh colored in unblown specimens, and chiefly marked with reddish brown spots about the larger end. They measure .77 inch in length and .52 in breadth."

SUBGENUS VIREO VIEILLOT.

"Wings short and rounded, a little longer than the tail, equal to it, or shorter. First primary distinct and large, from two-fifths to a half or more the length of the second, shorter or not longer than the eighth."

Vireo atricapillus WOODH.

BLACK-CAPPED VIREO.

PLATE XXXI.

Quite a common summer resident in the gypsum hills, at or near the south line of the State; at least, I found them very common in southeastern Comanche county. Arrive the last of April; begin laying the last of May to first of June; leave in September.

B. 247. R. 142. C. 185. G. —, 268. U. 630

HABITAT. Southern portion of the Great Plains; north into southwestern Kansas; south in winter into Mexico.

SP. CHAR. *Adult male:* Top and sides of head deep black, the lores and orbital ring pure white; lower parts pure white, the sides and flanks olive greenish, tinged with yellow; upper parts olive green, the wings and tail black, with pale olive yellow edgings. *Adult female:* Similar to male, but black of head usually duller, more slate-colored. *Young, in first autumn and winter:* Top and sides of head dull grayish brown; lores, orbital ring, and lower parts dull buffy white, or pale dull buffy, the sides brown olive; upper parts more brownish than in adult. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	4.65	6.95	2.15	1.80	.73	.39
Female	4.40	6.80	2.10	1.70	.73	.38

Iris light brick red; upper mandible black, lower mandible blue, edges and tips of both whitish; legs, feet, claws deep blue.

These birds are very local in their distribution, and, until of late, very little has been known in regard to their habits. They inhabit the oak woods upon the uplands, and the bushes and trees in the ravines on bluffy prairie lands. They have been found breeding in Comal, Medina, Comanche and Cooke counties, in Texas—invariably in trees and near the ground. They search for their food, which consists of small forms of insect life (and, no doubt, small berries in season), chiefly in the higher branches, and dart from their perch and capture on the wing.

While collecting and observing birds in southeastern Comanche county, Kansas, from May 7 to 18, inclusive, 1885, I captured three pairs of *Vireo atricapillus*, and saw quite a number, all in the deep ravines in the gypsum hills, on the Red or Salt Fork of the Arkansas River. The birds were quite bold and noisy, but this may be the case only during mating and the early

part of the breeding season. They are very pleasing singers, their song being not like the "Who's-afraid," jerky notes of the White-eyed Vireo, nor as loud as those of the Red-eyed, but a more warbling and varied song than that of any other of the family which I have heard.

On the 11th I found a nest near the head of a deep cañon, suspended from the forks of the end of a horizontal branch of a small elm tree, about five feet from the ground. It was screened from sight above by the thick foliage of the tree and the larger surrounding trees, but beneath, for quite a distance, there was nothing to hide it from view. The material, however, of which it was made so closely resembled the gypsum that had crumbled from the rocks above, and thickly covered the ground, that I should have passed it by unnoticed had I not, on my near approach, been attracted to the spot by the scolding and the excited actions of the birds. On discovering the nest, I did not stop to examine it, but kept leisurely on my course till out of sight, then cautiously turned back, and, at a safe distance, had the pleasure of seeing both of the birds busily at work building their nest, then about two-thirds completed. The nest is hemispherical in shape, and composed of broken fragments of old, bleached leaves, with here and there an occasional spider's cocoon, interwoven together, and fastened to the twigs with fibrous strippings and silk-like threads from plants and the webs of spiders, and lined with fine stems from weeds and grasses. On the 18th, my last day in the vicinity, I went to the nest, confidently expecting to find a full set of eggs, but, on account of the cold, wet weather, or for some other cause, the bird had not laid, and I had to content myself with the nest.

Eggs usually four, .72 x .51; plain white; in form, oval.

Vireo noveboracensis (Gmel.).

WHITE-EYED VIREO.

PLATE XXXI.

Summer resident; common in the eastern part of the State. Arrive in April; begin laying about the middle of May; leave the last of September to middle of October.

B. 248. R. 143. C. 181. G. 68, 269. U. 631.

HABITAT. Eastern United States; west to the Rocky Mountains; south in winter to Guatemala. Winters from the Gulf States southward; breeds throughout its United States range; resident in the Bermudas.

SP. CHAR. "First primary about half the length of second, which is longer than secondaries and about equal to the eighth; the fourth longest; third and fifth little shorter. Above, quite olive green; sides of neck, and a gloss on its upper surface, ashy. The middle concealed portions of feathers of lower back and rump pale sulphur yellowish. Beneath, white; the chin and lower cheeks with a grayish tinge; the sides of breast and body, with axillars and base of crissum (more faintly), bright yellow; the inner wing coverts and rest of crissum much paler, almost white. A broad yellow line from nostrils to and continuous with a yellow ring round the eye, which is encircled exteriorly by olivaceous; a dusky loreal, but no postocular spot. Wings, with two covert bands and innermost secondaries (externally), broadly yellowish white; rest of quills edged externally with olive, except the two outer and tips of other primaries, which are grayish. Rectrices edged externally with olive, except outermost, which is bordered by grayish. All the long quills bordered internally with whitish.

"Specimens vary slightly, in a greater amount of ashy on the head, and less brilliancy of the yellow of head and sides. Sometimes there is a decided ashy shade in the white of the throat and jugulum, which again has a very faint tinge of yellowish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.25	8.00	2.45	2.15	.74	.45
Female...	4.90	7.55	2.30"	2.00	.74	.45

Iris white; bill blue black, pale on edges; legs and feet dark lead colored; claws horn blue.

These sprightly little birds inhabit the thickets on the low prairies, where entangled with briars and vines, and the edges of woodlands bordering streams and swampy places. They differ from others of the family that I have described, inasmuch as they not only make their homes near the ground, but search for their food (which consists almost wholly of insects and their larva) in the lower branches of the trees and thickest growths of bushes, where they are so completely hidden that their presence would seldom be known were it not for their sharp, startling call or alarm notes and song. Even the latter is uttered in so loud and emphatic a manner as to sound more like a boastful challenge to a rival than an effort to please his lady love. In the latter part of the season the voice is toned down and at times quite musical. To the intruder or outside

world, their notes and actions are expressive of an irritable, petulant temperament. In this respect they differ from many of the highest order of animals, for if they are not all smiles to others, they are at all times a happy family at home, the mated pairs being very attentive and loving to each other, and kindly rear their young.

Their nests are deep, cup-shaped, and almost hemispherical in form. They are suspended usually from grape or other wild, running vines, in a small open space, surrounded by the thickest growths they can find, and are seldom over four feet from the ground. They are made of hemp-like fibers, bits of old leaves, mosses and lichen from decaying stumps and trees, and are lined with fine stemlets of weeds and grasses. Eggs four or five, .75x.55; clear white, with a few scattering spots of purple and dark reddish brown about the larger end; in form, oval.

Vireo bellii AUD.

BELL'S VIREO.

PLATE XXXI.

Summer resident; abundant. Arrive the last of April; begin laying the last of May; the bulk leave early in September.

B. 246. R. 145. C. 183. G. 69. 270. U. 633.

HABITAT. Middle portions of the United States; from Illinois and Minnesota west to the eastern base of the Rocky Mountains; south in winter into southern Mexico; breeding from central Texas (and probably farther south) northward throughout its range.

SP. CHAR. Wings dull dusky grayish, the middle and greater coverts narrowly and not very sharply tipped with dull white. Top of head and neck dull brownish gray, gradually changing to grayish olive green on back, scapulars, rump and upper tail coverts; a rather indistinct loral streak, and interrupted orbital ring, dull white; cheeks and ear coverts light brownish gray, fading gradually into dull white or buffy white of throat; median lower parts white, the breast usually faintly tinged with sulphur yellow; sides and flanks sulphur yellow, tinged with olive; under tail coverts and under wing coverts clear pale sulphur yellow. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.90	7.15	2.15	1.90	.70	.40
Female . . .	4.75	7.00	2.10	1.80	.70	.40

Iris brown; bill—upper dark brown, under pale; legs, feet and claws plumbeous.

These active birds are quite common throughout their range. They inhabit the dense patches of bushes and briars on the prairies; hedge fences are also a favorite resort. In their food habits and actions they are very similar to the White-eyed. Their call and alarm notes are not quite so harsh, and their song is delivered in a less emphatic manner; an indescribable sputtering, that does not rank it high in the musical scale.

Their deep, cup-shaped nests are suspended from slender forks of twigs or vines, and are composed of lint-like strippings from plants, neatly interwoven with bits of old leaves and other fragmentary substances, and lined with fine, slender stemlets from weeds and grasses; in some cases, lined with hairs. Eggs usually four, .69x.50; pure white, thinly speckled or dotted around the larger end with dark reddish brown; in form, oval.

FAMILY **MNIOTILTIDÆ**. WOOD WARBLERS.

Bill not conoid; angle of gonys not forward of the nostril; tertials not elongated, but with their tips falling far short of the ends of the longest primaries; hind claw much shorter than its digit. (*Ridgway*.)

"This varied and pretty family embraces the great majority of warblers—sylvan nymphs, that fairly swarm with us during their migratory flights; the larger portion winging themselves northward to breed, and all, with one exception (the Oven Bird—*Dendroica coronata*), wintering south of our limits, chiefly in southern Mexico and Central America."

GENUS **MNIOTILTA** VIEILLIOT.

"General form sylvicoline; bill rather long, compressed, shorter than the head, with very short rictal bristles and a shallow notch. Wings considerably longer than the tail, which is slightly rounded; first quill shorter than second and third. Tarsi rather short; toes long, middle one equal to the tarsus; hind toe nearly as long, the claw considerably shorter than its digit. Color white, streaked with black. Nest on ground; eggs white, blotched with red."

Mniotilta varia (LINN.).

BLACK AND WHITE WARBLER.

PLATE XXXI.

Summer resident; quite common in the eastern part of the State. Arrive the last of April; begin laying about the 20th of May; leave in September.

B. 167. R. 74, 74a. C. 91, 92. G. 32, 271. U. 636.

HABITAT. Eastern North America; north to Hudson's Bay, Great Slave Lake, etc.; west to the Great Plains; south in winter through Mexico to Central America; West Indies. Breeds from the Gulf coast northward.

SP. CHAR. Plumage black striped with white above; beneath, white with black streaks; wing with two white bands, and two outer tail feathers with white spot near end of inner web. *Adult male:* Throat thickly streaked with black, the latter sometimes nearly uniform. *Young male:* Throat pure white, without streaks; otherwise like adult. *Adult female:* Similar to young male, but colors duller, the back less intense, and white of lower parts tinged with brownish, especially along sides. *Nestling:* Similar to adult female, but colors much duller and less sharply defined, the head stripes dull grayish instead of black, and the white parts tinged with fulvous. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.12	8.50	2.75	2.00	.65	.45
Female	5.00	8.20	2.65	1.90	.65	.45

Iris black; bill black, with under, in some cases, pale blue; legs and feet bluish black; claws pale yellow.

These remarkable birds, with the habits largely of the Creepers and build of the Warblers, inhabit alike the high and low woodlands, and often frequent the orchards, but they are the most abundant along the banks of streams, or in the near vicinity of water, as insect life usually abounds in such places. They are enabled, by reason of the elongation of their toes, especially the hinder one, to creep (spiral-like) around, up and down the bodies of trees and their branches, where they industriously search in the cracks and natural interstices of the bark for the eggs and larva that are so injurious to the trees. They are, therefore, of great value in ridding the forests and orchards of their deadly pests.

They are not timid, but rather bold birds, that neither seek nor shun the habitations of man. As they move about they often utter a weak call note, "Tsip," and during the early breeding season their song is almost incessantly heard; a feeble and not very musical effort. The birds arrive from the south mated, or at least I have always met with them in the early spring in pairs.

Their nests are usually placed in a depression in the ground, at the roots of a tree, under the shelter of a log, bush or bunch

of weeds, and are composed of strippings from plants, grasses, moss, leaves, and the inner bark from decaying trees, and lined with fine stemlets of grass and hairs. They are occasionally partially roofed over. The materials selected so closely resemble the ground and its surroundings, that their nests are oftener found by accident than otherwise. Eggs four or five, .65x.52; white, with a creamy tinge, irregularly specked and spotted with umber and reddish brown, chiefly around the larger end; in some cases a few purplish spots; in form, oval. A set of five eggs, collected May 23d, at West Newton, Mass., are, in dimensions: .64x.50, .64x.52, .65x.51, .66x.52, .66x.52.

GENUS **PROTONOTARIA** BAIRD.

"Characterized by its long, distinctly notched bill, and long wings, which are an inch longer than the slightly graduated tail (the lateral feathers about .12 of an inch shorter). The under tail coverts are very long, reaching within half an inch of the tip of the tail. The tarsi and hind toe are proportionately longer than in the true Warblers. The notch and great size of the bill distinguish it from the Swamp Warblers."

Protonotaria citrea (Bodd.).

PROTHONOTARY WARBLER.

PLATE XXXI.

Summer resident in eastern to middle Kansas; common in the eastern portion of the State. Arrive the last of April; begin laying the last of May; the bulk leave in August; a few linger into September.

B. 169. R. 75. C. 95. G. 33, 272. U. 637.

HABITAT. Eastern United States, chiefly in the Mississippi Valley; north regularly to Georgia, Iowa and Nebraska; casually north to New Brunswick, Ontario and Minnesota; west into eastern Nebraska and Texas; south in winter to Cuba, Central America and northern South America. Breeds in suitable localities in the United States, throughout its regular range, and probably occasionally as it straggles northward.

SP. CHAR. Head and lower parts, except lower tail coverts, yellow; lower tail coverts, lining of wing, and inner webs of tail feathers, white; back, scapular, rump, sometimes top of head, olive green; wings plain bluish gray or plumbeous. *Adult male*: Head, neck and lower parts (except tail coverts) intense cadmium yellow, sometimes tinted with orange, the top of the head sometimes

olive greenish. *Adult female*: Similar to the duller colored males, but yellow appreciably less pure, the top of the head always olive greenish, and gray of wings and tail less bluish; size somewhat less. *Nestling*: Head, neck, chest, fore part of sides, and back, olive, lighter on lower parts; no yellow beneath, except after moult has commenced; otherwise much like adult female. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.50	9.00	2.90	2.15	.72	.55
Female	5.30	8.60	2.75	1.95	.72	.55

Iris and bill black; legs, feet and claws dark blue.

This active species inhabits the willows bordering streams, ponds and swampy, timbered lands. The males arrive about a week in advance of the females, and, upon the arrival of the latter, love making commences in earnest, each male showing off to the best advantage, and bravely fighting for his choice. The female, apparently indifferent to their rivalry, gladly accepts the conqueror, and is his devotedly thereafter. They soon select a locality that suits, and commence hunting for a nesting place; a Woodpecker hole or natural cavity in a willow overhanging or near the water.

Their call note, often heard, is a sharp "Chip," and their ordinary song loud but not musical; sounds much like the "Peet-weet, tweet, weet" of the Solitary Sandpiper; but I have often heard them sing near the nest, when the mate was sitting, in a low, soft and rather sweet warbling manner. They search for their food in low, wet thickets, and on drift wood and partly-submerged logs. It consists chiefly of the small forms of aquatic life; spiders and beetles are also favorites.

My brother was the first to discover and report that they nest in holes in trees. Soon after, we found a pair nesting in a brace hole in our saw mill, and it gave us an excellent opportunity to observe their habits, as they soon learned that they had nothing to fear from us (they are not naturally wild or timid birds). Several years afterward I found a nest in the mill; it was built in an old tin cup, sitting on a beam close beneath the roof. Their natural nesting places are in holes in willow trees and stubs, and never far from the ground.

Their nests are composed of moss, grasses, dry leaves, lichens,

and even bits of soft, rotten wood, interwoven with fine rootlets, and lined with hairs. Eggs usually five or six (as high as eight have been taken), .68x.56; creamy white, thickly spotted with lilac, purple and dark reddish brown, thickest and often confluent at larger end; in form, rounded oval.

GENUS **HELMITHERUS** RAFINESQUE.

"Bill large and stout, compressed, almost tanagrine; nearly or quite as long as the head. Culmen very slightly curved; gonys straight; no notch in the bill; rectal bristles wanting; tarsi short—but little longer, if any, than the middle toe; tail considerably shorter than the wings, rather rounded; wings rather long, the first quill a little shorter than the second and third."

Helmitherus vermivorus (GMEL.).

WORM-EATING WARBLER.

PLATE XXXI.

Summer resident in the eastern part of the State; rare. Arrive the last of April; begin laying the last of May; leave the last of August to middle of September.

B. 178. R. 77. C. 96. G. 34, 273. U. 639.

HABITAT. Eastern United States; north to southern New England, the great lakes and Iowa, chiefly south of latitude 40°; west to eastern Nebraska and Texas; south in winter to Cuba, Jamaica, and southern Central America. Breeds throughout most of its United States range.

SP. CHAR. *Adult (sexes alike)*: Head buff, with a broad black stripe on each side of the crown (from nostrils to occiput), and a narrower black stripe behind the eye, along upper edge of the auriculars, continued more or less distinctly at the anterior angle of the eye; upper parts plain olive green; lower parts buff, paler on chin, throat, abdomen and crissum, where sometimes almost white. *Young, first plumage*: Head, neck and lower parts deep buff, the black stripes of the adult merely indicated by indistinct stripes of dull brown; back, scapulars, rump and wing coverts dull light brown, tinged with cinnamon, the greater coverts passing into deep buff terminally; remiges and rectrices olive green, as in the adult. The buff of head stripes, etc., is deeper in autumnal specimens. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.50	8.55	2.90	2.10	.65	.55
Female . . .	5.30	8.25	2.75	1.95	.65	.52

Iris dark brown; bill—upper blackish brown, under pale; legs, feet and claws brownish flesh color.

This species inhabits the deep woods and thick growths in the ravines. They are shy and retiring, and, as their call note is weak, they are liable to be passed unnoticed. They search for their food not only among the foliage but upon the ground, where they scratch among the leaves, and move about much like the Oven-bird, barring the teetering motion of the body when they halt. They feed largely upon the leaf-eating worms. In the stomachs of two examined I found caterpillars and small spiders.

Its song is feeble. Mr. Ridgway says it closely resembles that of the Chipping Sparrow, and, to my ear, is not any more musical.

Their nests are embedded in dry leaves, in a slight depression in the ground, and are usually hidden beneath small plants or neatly concealed by the leaves around and partially covering them. The interior is lined with small, flexible, hair-like stemlets. Eggs usually four, .68x.55; white to creamy white, finely spotted with varying shades of reddish brown, thickest and running together about the larger end, intermingled with a few lilac stains. Some are thickly and others are thinly marked. They also vary greatly in size, and in form, from broadly oval to pointed oval.

GENUS **HELMINTHOPHILA** RIDGWAY.

Bill rather elongated (but shorter than the head), somewhat conical, very acute, the outlines nearly straight but sometimes slightly decurved at the tip; no trace of a notch at the tip nor of bristles at the base. Wings long and pointed (decidedly longer than a moderately-developed tail); the first quill nearly, sometimes quite, the longest. Tail nearly even or slightly emarginate. Tarsi appreciably longer than the middle toe and claw. (*Ridgway.*)

Helminthophila pinus (LINN.).

BLUE-WINGED WARBLER.

PLATE XXXI.

Summer resident in the eastern part of the State; rare; in migration quite common. Arrive the last of April; begin laying the last of May; leave early in September.

B. 180. R. 79. C. 98. G. 35, 274. U. 641.

HABITAT. Eastern United States; north to southern New England, the Great Lakes and Minnesota; west to Nebraska, middle

Kansas and Texas; south in winter to eastern Mexico and Guatemala; breeding in its United States range.

SP. CHAR. *Adult male:* Forehead, fore part of crown, cheeks and entire lower parts (except crissum), pure gamboge yellow, most intense on forehead; crissum and lining of wing white, usually more or less tinged with yellow. Occiput, cervix, back, scapulars and rump plain olive green, brightest on the rump, where more tinged with yellow; wings and tail bluish gray, the former crossed by two white bands, formed by tips of middle and greater coverts; two outer tail feathers with most of the inner web white, the third with about the terminal half white. Lores and a narrow postocular streak deep black. Bill wholly deep black; iris brown; legs and feet dull plumbeous, more or less tinged with yellowish, especially on soles of toes. In autumn similar, but yellow of forehead more or less obscured by olive green; maxilla dark plumbeous to brownish black, its edge (with mandible) dull flesh color, or purplish brown, the latter with a blackish stripe along each side. *Adult female:* Similar to the male, but colors appreciably duller. (*Ridgway.*)

Dimensions of a pair in "The Goss Ornithological Collection:"

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.00	7.20	2.40	2.10	.68	.42
Female . . .	4.70	6.85	2.25	1.85	.68	.40

Iris dark brown; bill black, sometimes with base of under pale; legs and feet dark blue; claws and bottoms of feet pale greenish yellow.

This pretty warbler occasionally frequents the gardens and orchards, but its natural haunts are within the low, open woods, neglected fields, and the edges of timber fringing the streams where the bushes and weeds grow rank. It is an industrious hunter, hopping nimbly about among the slender branches of flowering plants for the leaf-eating worms and other small forms of life.

It is not a very musical bird, but during the early breeding season (I have occasionally heard them sing in autumn) they often mount on the top of a bush, and utter, with tremulous wings, a sharp, wiry song, that sounds much like that of the Grasshopper Sparrow.

Their nests are built on the ground, among the standing weeds and grasses, or hidden beneath a bush, bunch of briars or vines. They rest on a foundation of dry leaves, and are composed chiefly of strippings from grapevines, plants, etc., intermingled

with leaves and grasses, and usually lined with finer grasses. Eggs four or five, .60 x .50; white, thinly speckled with varying shades of reddish brown to black, chiefly at or near the larger end; in form, oval. A set of five eggs, collected June 15th, 1882, at Old Saybrook, Connecticut, are, in dimensions: .58 x .47, .59 x .49, .60 x .46, .61 x .48, .63 x .48.

***Helminthophila ruficapilla* (Wils.).**

NASHVILLE WARBLER.

PLATE XXXI.

Migratory; rather rare. Arrive the last of April to first of May; the bulk return and leave in September; a few linger as late as the middle of October.

B. 183. R. 85. C. 106. G. 36. 275. U. 645.

HABITAT. Eastern temperate North America (accidental to Greenland); west to the Great Plains; south in winter to eastern Mexico and Guatemala; breeding from the northern United States northward.

"SP. CHAR. "Head and neck, above and on sides, ash gray; the crown with a concealed dark brownish orange, hidden by ashy tips to the feathers. Upper parts olive green, brightest on the rump. Under parts generally, with the edge of the wing, deep yellow; the anal region paler; the sides tinged with olive. A broad, yellowish-white ring round the eye; the lores yellowish; no superciliary stripe. The inner edges of the tail feathers margined with dull white. *Female:* Similar, but duller; the under parts paler and with more white; but little trace of the red of the crown."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	4.60	7.60	2.40	1.85	.65	.40
Female . . .	4.50	7.50	2.35	1.75	.65	.40

Iris dark brown; bill dusky, pale beneath; legs dark brown; feet and claws dusky, with yellowish hue.

These sprightly Warblers frequent the timber skirting the streams and clearings, especially where there is plenty of undergrowth. In the early part of June, 1880, I found them quite common at Grand Manan, N. B. From their actions, I think they were nesting, but I failed to find their nests. They seemed to prefer for their breeding grounds the edges of the high, open woodlands, where the growth is a mixture of evergreen and deciduous trees. Prof. J. A. Allen gives the following interesting description of their nesting habits, etc., at Springfield, Mass.:

“Abundant in May, and in the early part of autumn. Arrives May 1st to 5th, and for two or three weeks is a common inhabitant of the orchards and gardens, actively gleaning insects among the unfolding leaves and blossoms of the fruit trees; nearly all go north, but a few retire to the woods and breed. During June, 1863, I frequently saw them in my excursions in the woods; often three or four males in an hour’s walk. Its song so much resembles that of the Chestnut-sided Warbler that it might readily be mistaken.* To this cause, and the difficulty of seeing such small birds in the dense foliage, is doubtless owing the fact of its being so commonly overlooked by naturalists during the summer months, rather than to its (supposed) extreme rarity in this latitude at that season. I have found the nest of this species, for two successive seasons, as follows: May 31st, 1862, containing four freshly-laid eggs. The nest was placed on the ground, and sunken so that the top of the nest was level with the surface of the ground, and protected and completely concealed above by the dead grass and weeds of the previous year. It was composed of fine rootlets and dry grasses, lined with fine dried grass and a few horse hairs, and covered exteriorly with a species of fine green moss. The eggs were white, sprinkled with light reddish-brown specks, most thickly near the larger end; longer diameter .60, and the shorter .50. The following year, June 5th, 1863, I found another nest of this species, within three or four feet of where the one was discovered the previous year, containing three eggs of this species and one of the Cowbird, in all of which the embryos were far advanced. The nest, in every particular, was built and arranged like the one above described, and the eggs must have been laid at just about the same time. . . . The locality of the nest was a mossy bank at the edge of young woods, sloping southward, and covered with bushes and coarse grass.”

Eggs three to five, .61x49; white to creamy white, minutely spotted over the surface, chiefly about the larger end, with reddish brown and lilac; in form, oval.

* The males sing quite loudly from the treetops, but, to my ear, their song is less musical than the Chestnut-sided Warbler, and much more like the trill of the Chipping Sparrow.

Helminthophila celata (SAY).

ORANGE-CROWNED WARBLER.

PLATE XXXI.

Migratory; common. Arrive the last of April to first of May; begin to return the last of August; the bulk leave in September, a few remain until the last of October.

B. 184. R. 86. C. 107. G. 37. 276. U. 646.

HABITAT. Northern North America; breeding from the Rocky Mountains north into the Arctic regions; rare in the northeastern United States; quite common in the Middle States and throughout the Mississippi valley; wintering in the South Atlantic and Gulf States and eastern Mexico. (Replaced from the Alaskan peninsula southward along the Pacific coast into Lower California, by *H. celata lutescens*.)

SP. CHAR. "Above, grayish olive green, rather brighter on the rump. Beneath, entirely greenish yellowish white, except a little whitish about the anus; the sides tinged with grayish olivaceous. A concealed patch of pale orange rufous on the crown, hidden by the grayish tips of the feathers. Eyelids and obscure superciliary line yellowish white; a dusky obscure streak through the eye. Inner webs of tail feathers broadly edged with white. Female with little or none of the orange on the crown, and the white edgings to inner webs of tail feathers. Young lacking the orange entirely, and with two fulvous whitish bands on the wing."

Dimensions of a pair in "The Goss Ornithological Collection:"

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	4.70	7.50	2.35	2.00	.70	.41
Female . . .	4.60	7.40	2.30	1.90	.68	.40

Iris dark brown; bill dusky, with forks of under pale blue; legs, feet and claws dark brown; bottoms of feet greenish yellow.

These lively little birds frequent the groves, edges of woodlands, the gardens and shrubbery about our dwellings. In the winter season I have usually met with them along the coast, in thickets and scattering bushes upon the bottom lands. They are rather unsuspicious birds, that, regardless of the intruder, continue their search among the foliage for the leaf worms, etc., and often dart from their perch and successfully capture the passing insects. As they flit here and there, occasionally utter a sharp "Chip," that sounds more like an alarm than a call note.



PLATE XXXII.

1. TENNESSEE WARBLER; Male. 2. PARULA WARBLER; Male. 3. YE. LOW WARBLER; Male. 4. Female. 5. MYRTLE WARBLER; Male. 6. Female.
7. AUDUBON'S WARBLER; Male. 8. Female. 9. MAGNOLIA WARBLER; Male. 10. Female. 11. CHELSEA WARBLER; Male. 12. Female. 13. CHESTNUT-SIDED WARBLER; Male. 14. Female. 15. BLACK-POLL WARBLER; Male. 16. Female. 17. BLACKBURNIAN WARBLER; Male. 18. Female. 19. BLACK-THROATED GREEN WARBLER; Male. 20. Female. 21. PALM WARBLER; Male. 22. PRAIRIE WARBLER; Male. 23. Female.

Their song, only heard during the mating and breeding season, is a simple lay—a few sweet trills uttered in a spirited manner, and abruptly ending on a rising scale.

Their nests, according to Mr. Kennicott, who found them breeding in the middle of June, in the vicinity of Great Slave Lake, are uniformly placed on the ground, usually among the leaves in a clump of low bushes, but sometimes hidden in the side of a bank. They were large for the size of the bird, and were composed almost entirely of long, coarse strips of bark, loosely interwoven with a few stems of plants and dry grasses, and warmly lined with hair and fur of small animals, in some cases wholly with fine grasses. Eggs four to six, .64 x .48; white, or creamy white, finely speckled (chiefly on the larger end) with reddish brown; in form, oval.

***Helminthophila peregrina* (Wils.).**

TENNESSEE WARBLER.

PLATE XXXII.

Migratory; common in the eastern part of the State. Arrive the last of April to first of May; return in September, but do not all leave for the south until about the middle of October.

B. 185. R. 87. C. 109. G. 38, 277. U. 647.

HABITAT. Eastern temperate North America; west to the base of the Rocky Mountains (rare east of the Alleghanies, common westward); breeding from the northern United States northward to Hudson's Bay and the Great Slave Lake region; south in winter to northern South America; Cuba.

SP. CHAR. "Top and side of the head and neck ash gray; rest of upper parts olive green, brightest on the rump; beneath, dull white, faintly tinged in places, especially on the sides, with yellowish olive. Eyelids and a stripe over the eye whitish; a dusky line from the eye to the bill; outer tail feathers with a white spot along the inner edge near the tip. *Female:* With the ash of the head less conspicuous; the under parts more tinged with olive yellow.

"Autumnal specimens and young birds are sometimes so strongly tinged with greenish yellow as to be scarcely distinguishable from *H. celata*. The wing is, however, always longer, and the obscure whitish patch on the inner edge of the exterior tail feathers, near its tip, is almost always appreciable. In *celata* this edge is very narrowly and uniformly margined with whitish."

Dimensions of a pair in "The Goss Ornithological Collection:"

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.75	7.75	2.50	1.85	.65	.41
Female . . .	4.60	7.50	2.40	1.70	.65	.40

Iris dark brown; bill—upper black, under bluish; legs and feet dark grayish blue; claws brown.

These little Warblers frequent the edges of woodlands and the banks of streams, where fringed with trees, low bushes and tall weeds, also the orchards and gardens. They are very lively and easy in their motions, as they flit here and there in search of caterpillars and other leaf-eating forms of life, often hanging head downward at the end of slender branches and swaying about much like the Titmice. They are also quite expert insect catchers on the wing. They occasionally puncture the grapes with their bills and eat the pulp or succulent part, but they are not abundant enough to be considered injurious, even if fruit were as natural a food as insect life; as it is, it can only be considered a freak, or for a dessert. In 1879 I called attention to the fact in the Nuttall Ornithological Club Bulletin, Vol. 5, p. 48. I can find no other mention of the same, and am inclined to think the habit is not a general one.

Their call note, often repeated, is a low but sharp "Chip" or "Tweet," and their song a feeble, varied warble, too squeaky to be musical. I have never been so fortunate as to find their nests, or see their eggs, and very little is definitely known in regard to their nesting habits, farther than that, like all the species of this genus, it usually nests on the ground. Doctor Brewer, in "North American Land Birds," says:

"A nest of this Warbler (Smith. Coll., 3476), obtained on the northern shore of Lake Superior by George Barnston, is but little more than a nearly flat bed of dry, matted stems of grass, and is less than an inch in thickness, with a diameter of about three inches. It is not circular in shape, and its width is not uniform. Its position must have been on some flat surface, probably the ground. The eggs resemble those of all the family in having a white ground, over which are profusely distributed numerous small dots and points of a reddish brown,

and a few of purplish slate. They are of an oblong oval shape, and measure .68 x .50 of an inch.

"A nest near Springfield, Massachusetts, obtained by Prof. Horsford, the parent bird having been secured, was built in a low clump of bushes, just above the ground. It is well made, woven of fine hempen fibers of vegetables, slender stems of grass, delicate mosses, and other like materials, and very thoroughly lined with hair. It measures two and three-fourths inches in diameter and two in height. The cavity is two inches wide and one and three-fourths deep. The eggs measure .60 x .50 of an inch, are oblong oval in shape, their ground color a pearly white, marked in a corona, about the larger end, with brown and purplish-brown spots."

GENUS **COMPSOTHLYPIS** CABANIS.

"In the species of this genus the bill is conical and acute; the culmen very gently curved from the base, the commissure slightly concave. The notch, when visible, is further from the tip than in *Dendroica*, but usually is either obsolete or entirely wanting. Bristles weak. The tarsi are longer than the middle toe. The tail is nearly even and considerably shorter than the wing. *Color*: Blue above, with a triangular patch of green on the back; anterior lower parts yellow."

Compsothlypis americana (LINN.).

PARULA WARBLER.

PLATE XXXII.

Summer resident in the eastern part of the State; rare; during migration very common; rare in the western portion. Begin to arrive as early as the middle of April; begin laying the last of May. The bulk leave for the south in September; a few occasionally remain until the middle of October.

B. 168. R. 88. C. 93. G. 39, 278. U. 648.

HABITAT. Eastern North America; north to Canada; west to the base of the Rocky Mountains; south in winter to southern Florida, West Indies, eastern Mexico and Central America; breeding from the Gulf coast northward throughout their range, chiefly north of latitude 41°.

SP. CHAR. Eyelids white; yellow of lower parts not extending farther back than breast; the sides and flanks white, tinged with bluish gray and rusty brown. *Adult male*: Above bluish gray (more blue on head), the back bright olive green;

wing with two broad, white bands; chin, throat and breast yellow; chest more or less tinged with orange brown, this often bordered anteriorly by a blackish band across the lower throat; rest of lower parts white; the sides tinged with bluish gray and reddish brown. *Adult female*: Similar to the male but paler; all colors less pronounced. *Young, in first autumn*: Upper parts in general tinged with olive green; yellow of lower parts paler. *Young*: Yellow of lower parts replaced by light grayish, the chin tinged with yellow; above, dull grayish, more olive on back; the wings and tail much as in adult female, but duller grayish. (*Ridgway*.)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.55	7.20	2.25	1.80	.65	.40
Female . . .	4.20	6.75	2.05	1.60	.65	.38

Iris dark brown; bill—upper black, under pale yellow; legs, feet and claws pale brown; bottoms of feet yellowish.

The natural haunts of this graceful little Warbler are within the timbered lands along the streams and borders of swamps, where it delights to forage in the topmost branches of the trees, skipping from branch to branch, darting off to catch a passing insect, peeping into the crevices of the bark from the under side of the limbs, or swaying from the ends of leafy twigs, with the ease and freedom of the Chickadee. When the fruit trees are in blossom, it visits the gardens and orchards, and rids the buds and blossoms of many a pest. It is thought by some to also feed upon the pollen and other soft parts of blossoms, but I have so far failed, upon dissection, to find a trace of anything but insect life.

Their call note sounds much like “Cheep,” and when scolding or alarmed it is uttered in a chattering manner. Their song is a feeble effort, that can only be heard a short distance; a rather sharp, lisping, twittering trill.

For their nesting places, they select low or swampy lands, where the pendulous mosses grow. Dr. Brewer, in “North American Land Birds,” gives the following minute description of their nests and eggs:

“The nests of this Warbler, so far as have fallen under my observation, have always been made of long gray lichens, still attached to the trees on which they grow. With great skill do these tiny architects gather up, fasten together, and interweave, one with the other, the hanging ends and long branches. By

an elaborate intertwining of these long fibers, they form the principal part, sometimes the whole, of their nests. These structures are at once simple, beautiful, ingenious, and skillfully wrought. When first made they are somewhat rude and unfinished, but as their family are gathered, the eggs deposited, incubated and hatched, a change has been going on. Little by little has the male bird busied himself, when not procuring food for his mate, in improving, strengthening and enlarging the nest. These same acts of improvement upon the original nests are noticed with Hummingbirds, Vireos, and a few other birds.

“The nests are sometimes constructed on the sides of trunks of trees, when covered with long gray lichens, but are more frequently found hanging from branches, usually not more than six or eight feet from the ground. Thus surrounded by long, hanging mosses, in clumps not distinguishable from the nests themselves, they would not be readily recognized were it not that those familiar with the habits of the bird may be readily guided to the spot by the artless movements of the unsuspecting parents.

“These birds are confiding, easily approached, and rarely exhibit signs of alarm. Even when their nest is disturbed they make but little complaint, and do not manifest any very great signs of emotion. When built against a trunk these nests consist only of an interweaving of the mosses above and below a very small opening; within, a small, cup-shaped flooring has been made of the same material, and usually cannot be removed without destroying all semblance of a nest. When pensile they are perfectly circular in shape, with an entrance on one side, and rarely with any lining. Occasionally they are models of symmetry and beauty.

“The eggs, four or five in number, have a clear white ground, and are sparingly spotted with markings of reddish brown, slate, purple and lilac. In some the first predominate; in others the last three shades are more abundant, and usually form a confluent ring around the larger end. They measure from .62 to .65 of an inch in length, and from .49 to .50 in breadth.”

Eggs three to five. A set of four eggs, collected at Shelter

Island, N. Y., are, in dimensions: .65x.44, .66x.45, .67x.48, .68x.47; in form, oval.

GENUS **DENDROICA** GRAY.

"Bill conical, attenuated, depressed at the base, where it is, however, scarcely broader than high, compressed from the middle. Culmen straight for the basal half, then rather rapidly curving, the lower edge of upper mandible also concave. Gonys slightly convex and ascending. A distinct notch near the end of the bill. Bristles, though short, generally quite distinct at the base of the bill. Tarsi long, decidedly longer than middle toe, which is longer than the hinder one; the claws rather small and much curved, the hind claw nearly as long as its digit. The wings long and pointed; the second quill usually very little longer than the first. The tail slightly rounded and emarginate. *Colors*: Tail always with a white or yellow spot; its ground color nearly clear olive green. In *D. æstiva*, edged internally with yellow."

SUBGENUS **DENDROICA** GRAY.

No white spot at base of quills, or else no other white markings on outer surface of wings; wing less than half as long again as tail. (*Ridgway*.)

Dendroica æstiva (GMEL.).

YELLOW WARBLER.

PLATE XXXII.

Summer resident; abundant in the eastern part of the State; not uncommon westward. Arrive the last of April; begin laying about the middle of May; leave the last of August to first of September.

B. 203. R. 93. C. 111. G. 40, 279. U. 652.

HABITAT. North America at large; breeding from northern Mexico northward to the Arctic coast; wintering in Mexico, Central America, and southward into South America.*

SP. CHAR. "*Adult*: Head, all round, and under parts generally, bright yellow; rest of upper parts yellow olivaceous, brightest on rump; back with obsolete streaks of dusky reddish brown; fore breast and sides of the body streaked with brownish red; tail feathers bright yellow; the outer webs and tips, with the whole upper surface of the innermost one, brown; extreme outer edges of wing and tail feathers olivaceous like the back; the middle and greater coverts and tertials edged with yellow, forming two bands on the wings. Female similar, with the crown olivaceous like the back, and the streaks wanting on the back and much restricted on the under parts; tail with more brown. *Young*: Dull brownish olive above; pale ochraceous yellow beneath, with the throat more

**Dendroica æstiva morcomi* COALE, an alleged western form, is not recognized by the A. O. U. Committee, as the little differences that may exist are thought to be too inconstant and uncertain to entitle it to a subspecific separation.

whitish; the yellow of tail restricted to inner half of inner webs. The latter feature will serve to distinguish it from any North American species."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.20	8.00	2.55	2.00	.70	.43
Female . . .	5.00	7.65	2.40	1.80	.70	.40

Iris bluish black; bill dark blue, upper nearly black; legs, feet and claws light yellowish brown.

These widely distributed and attractive birds are the most common and familiar of all the Warblers. They seldom frequent the deep woods, preferring the groves, orchards, gardens, parks and shade trees for their haunts, and they are as much at home in the large cities as in the country. (Or were until the introduction and spread of the aggressive English Sparrow.) They are great favorites, not only on account of their song and pretty ways, but because they are very beneficial in ridding the trees, vines, etc, of the various forms of injurious insects, for which they diligently hunt among the foliage.

They sing sweetly, and late in the season—a lively, cheerful, whistling song. Their call note is a rather loud "Chip."

Their nests are placed in small trees and bushes, giving preference to orchards and shrubbery in gardens; a neatly-constructed nest of fibrous strippings and cotton-like substances from plants, and lined sparingly with fine grasses, hairs, and now and then a feather. Eggs* four or five, .66x.50; bluish white, with specks and blotches of brown, umber and lilac, irregularly scattered over the egg, thickest around larger end; in form, oval.

***Dendroica coronata* (LINN.).**

MYRTLE WARBLER.

PLATE XXXII.

Winter sojourner; not common; in migration abundant. Begin to move northward the last of March, and by the middle of April all but a few stragglers have left us; begin to return the last of September, the bulk not arriving until the middle of October.

B. 194. R. 95. C. 119. G. 41, 280. U. 655.

HABITAT. The whole of North America, but chiefly east of the Rocky Mountains, breeding from the northern United States

northward into the Arctic regions; and what is strange for so hardy a bird, have been found breeding in Jamaica; winter from about latitude 40° south into southern Central America.

SP. CHAR. Outer surface of wings with more or less distinct lighter markings, but without white spot at base of quills; rump yellow; crown with a yellow patch (partly concealed). *Adult male*: Lower parts, including chin and throat, white; the chest and sides broadly streaked with black (these streaks sometimes more or less confluent, forming a broken patch), and the sides of the breast with a yellow patch; upper parts bluish gray, becoming blackish on sides of head, which are marked by white supraloral and postocular streaks; back broadly streaked with black; wing with two white bands across tip of middle and greater coverts. *Adult female*: Similar to male, but much duller in color, with markings less conspicuously contrasted. *Winter plumage (sexes essentially alike)*: Upper parts strongly washed with umber brown, and lower parts more or less suffused with a paler wash of the same—the pattern of the summer plumage being thereby much obscured; streaks on chest, etc.; and yellow patches indistinct. *Young*: No yellow anywhere, except sometimes on rump; whole plumage thickly streaked above and below with dusky and grayish white; tail much as in adult. (*Ridgway*).

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.75	9.10	3.00	2.40	.73	.38
Female . . .	5.50	8.70	2.80	2.20	.72	.38

Iris brown; bill, legs, feet and claws black.

These hardy Warblers frequent the open woods and borders of streams. During the winter months, in their northern winter homes, they feed chiefly upon spiders, eggs and larva of insects, and also upon the berries of the poison ivy, etc.; in the early spring, as they move northward, upon the insects that gather about the unfolding leaves, buds and blossoms. In the spring of 1880, I found the birds in large numbers on Brier Island and other places in Nova Scotia, feeding along the beach, in company with the Savanna Sparrow and Horned Lark, upon the small flies and other insects that swarm about the kelp and debris washed upon the shore; uttering almost continually, as they flit about, a "Tweet" note, the males often flying to the tops of the small hemlocks to give vent to their happiness in song, which is quite loud for Warblers—rather short, but soft and pleasing, and it seemed to me especially so in contrast with the feeble, reed-like notes of the Savanna Sparrow.

The birds usually build their nests in low trees and bushes.

According to Mr. MacFarlane, who found them nesting at Anderson River, they occasionally nest on the ground. Doctor Brewer, in "North American Land Birds," gives the following minute description of a nest:

"In the summer of 1855, early in July, I obtained a nest of this species in Parsboro', Nova Scotia. It was built in a low bush, in the midst of a small village, and contained six eggs. The parents were very shy, and it was with great difficulty that one of them was secured for identification. Though late in the season, incubation had but just commenced.

"The nest was built on a horizontal branch, the smaller twigs of which were so interlaced as to admit of being built upon them, though their extremities were interwoven into its rim. The nest was small for the bird, being only two inches in depth, and four and a half in diameter. The cavity is one and one-half inches deep and two and a half wide. Its base and external portions consist of fine, light dry stalks of wild grasses, and slender twigs and roots. Of the last, the firm, strong rim of the nest is exclusively woven. Within, the nest is composed of soft, fine grasses, downy feathers, and the fine hair of the smaller mammals."

Eggs three to six, .70x.53; white to greenish white, spotted and blotched (thickest and usually forming a wreath around the larger end) with varying shades of umber brown to blackish and pale lilac (they vary greatly in the amount of markings and shape); being in form rounded oval to ovate.

***Dendroica auduboni* (TOWNS.).**

AUDUBON'S WARBLER.

PLATE XXXII.

Migratory in western Kansas; rather common. Arrive early in the spring; return and leave for the south in October; a few occasionally remaining late into November.

B. 195. R. 96. C. 120. G. 42. 281. U. 656.

HABITAT. Western North America; north to British Columbia; east to the eastern border of the Great Plains (accidentally to Massachusetts); wintering in southern Arizona and California,

southward through western Mexico to Guatemala; breeding in the mountainous regions throughout their range in the United States and northward.

SP. CHAR. "Above, bluish ash, streaked with black, most marked on the middle of the back; on the head and neck bluish ash. Middle of crown, rump, chin and throat, and a patch on the side of the breast, gamboge yellow; space beneath and anterior to the eyes, fore part of breast and sides, black; this color extending behind on the sides in streaks. Middle of belly, under tail coverts, a portion of upper and lower eyelids, and a broad band on the wings, with a spot on each of the four or five exterior tail feathers, white; rest of tail feathers black. *Female*: Brown above; the other markings less conspicuous and less black. *Young, first plumage*: Whole body, including head all round and rump, conspicuously streaked with slaty black, upon an ashy ground above and white below. No yellow on crown, rump, breast or throat. Wings and tail as in autumnal adult.

"This bird is very closely allied to *D. coronata*, but is distinguished by the yellow (not white) throat; the absence of a superciliary white stripe (the eyelids white, however); the restriction of the black of the face to the lores, and to a suffusion round the eye; and the presence of one broad band on the wings instead of two narrow ones."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.75	9.20	3.00	2.45	.73	.40
Female . . .	5.50	8.80	2.80	2.35	.72	.40

Iris brown; bill, legs, feet and claws black.

This western representative of the Myrtle Warbler is fully as common in suitable localities throughout its range, and its habits and actions are precisely the same.

Their nests are usually placed in evergreen trees, and range all the way from three to thirty feet from the ground. They are composed of strips of fine bark, pine needles, stems of plants, etc., and lined with fine rootlets, hairs, and a few downy feathers. Eggs usually four, .68 x .52; greenish to pale olive creamy white, rather thinly spotted and dotted with varying shades of brown to black and pale lilac, thickest about the larger end; in form, oval.

***Dendroica maculosa* (GMEL.).**

MAGNOLIA WARBLER.

PLATE XXXII.

Migratory; rare. Arrive the first of May; begin to return the last of August, and leave for the south during the month of September.

B. 204. R. 97. C. 125. G. 43. 282. U. 657.

HABITAT. Eastern North America; west to the base of the Rocky Mountains; breeding from the northern United States to Hudson's Bay and Great Slave Lake; south in winter to the Bahamas, Cuba, eastern Mexico and southern Central America.

SP. CHAR. Crown plain grayish, without yellow spot. *Adult male:* Top of head plain bluish gray, lighter around border (the superciliary region whitish); lores and ear coverts deep black; back black, sometimes mixed with yellowish olive green; wings black, with a large white patch covering both rows of coverts; lower parts rich gamboge yellow, the chest and sides boldly striped with deep black. *Adult female:* Similar to male, but colors duller, the back mainly (sometimes entirely) olive green; wing coverts with two separated white bands; streaks on lower parts narrower, etc. *Autumnal plumage:* Above, olive, becoming grayish on head, and greenish on back; throat pale grayish; no streaks across chest. *Young:* Above, dull brown, very indistinctly clouded with darker; wings dusky, with two pale, dingy yellowish or yellowish-white bands across tips of coverts; chest smoky brown, indistinctly streaked with lighter; chin and throat lighter brownish; rest of lower parts pale sulphur yellow, broadly streaked with dusky, except on belly and under tail coverts. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	4.85	7.50	2.40	2.00	.70	.38
Female	4.75	7.15	2.25	1.90	.70	.38

Iris dark brown; bill black, with under sometimes pale at base; legs, feet and claws dusky; bottoms of feet dull greenish yellow.

These handsome Warblers are decidedly the most showy of the family, and they are evidently aware of the fact, and proud of their rich, varied plumage, as they make the greatest display possible of the same, moving nimbly and gracefully about, with outspread tail and partially closed wings, not only in courtship, but in their search among the foliage for insect life. During migration, they stop to rest and feed in the groves, gardens and orchards, seldom in the deep woods. At such times they move silently along, only uttering their ordinary and rather ringing "Chip," reserving their song for their breeding grounds; at least I have never heard one sing far south of its summer home. I do not think the birds are abundant anywhere. In the spring and early summer of 1880, I found them quite common in Nova Scotia and New Brunswick, where they seemed to prefer for their haunts the thick growths of small spruce and hemlock. They make their presence known by their song, which is shrill,

but clear and sweet, and, when perched upon the top of a tree, quite prolonged; as a rule, however, they are too restless to remain long in a place, and generally warble in broken notes, or snatches, as they flit actively among the boughs.

On the 11th of June, I had the pleasure of finding, at Grand Manan, N. B., a nest containing four eggs, in a little spruce, not over three feet in height. The nest was built on the top of a spreading branch, six inches from the body of the tree and two feet from the ground. It was composed almost wholly of small, slim stems of weeds, and thickly lined with jet black, hair-like rootlets, in marked contrast with the dull, faded nest. Eggs: .60x.48, .63x.50, .65x.50, .68x.50; creamy white, rather sparingly spotted with umber to reddish brown and lilac, thickest and sometimes confluent around the larger end; in form, oval.

***Dendroica cærulea* (WILS.).**

CERULEAN WARBLER.

PLATE XXXII.

Summer resident in the eastern part of the State; common; rare westward. Arrive the last of April; begin laying the last of May. The bulk leave early in September; a few occasionally linger until the first of October.

B. 201. R. 98. C. 118. G. 44, 283. U. 658.

HABITAT. Eastern United States and southern Canada; west to the Great Plains; rare or casual east of central New York and the Alleghanies; south in winter to western Cuba, Yucatan, Honduras and Panama.

SP. CHAR. "*Male*: Above, bright blue, darkest on the crown, tinged with ash on the rump; middle of back, scapulars, upper tail coverts and sides of the crown streaked with black; beneath, white; a collar across the breast and streak on the sides dusky blue; lores, and a line through and behind the eye (where it is bordered above by whitish), dusky blue; paler on the cheeks. Two white bands on the wing; all the tail feathers except the innermost with a white patch on the inner web near the end. *Female*: Greenish blue above, brightest on the crown; beneath, white, tinged with greenish yellow, and obsoletely streaked on the sides; eyelids and a superciliary line greenish white. The autumnal adult plumage of both sexes is in every respect exactly like the spring dress. Young males in late summer are very similar to adult females, but are purer white below, and less uniform greenish blue above, the dark stripes on sides of the crown and black centers to scapulars being quite conspicuous; the

young female, at the same season, is similar in pattern to the adult, but is dull green above, without any tinge of blue, and light buffy yellow below.

"There is considerable variation in adult males, especially in the width of the pectoral collar; one (No. 60877, Mt. Carmel, Wabash county, Ill., Aug. 9th) has this entirely interrupted. In this individual there is no trace of a whitish supra-auricular streak; while others from the same locality, and obtained at the same date, have the bands across the jugulum continuous, and a quite distinct white streak over the ear coverts."

Dimensions of a pair in "The Goss Ornithological Collection:"

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.90	8.00	2.65	1.80	.65	.40
Female . . .	4.75	7.85	2.60	1.70	.65	.40

Iris brownish black; bill black, with under pale at base; legs and feet deep blue; claws brown.

These pretty azure birds inhabit the deep woods, preferring the timbered bottom lands along the streams, where they make their homes in the treetops, seldom descending to the lower branches, and to the ground only when in search of material for a nest. They are lively and graceful in their movements, flitting here and there through the foliage, and often, in their search for insect life, swaying head downward from the ends of slender twigs with the ease of a Titmouse. They are the most abundant in the eastern portion of the Mississippi valley. Living as they do in the upper branches, and largely in the wild woods, their breeding range is but little known, and they are no doubt much more common everywhere than they are generally reported to be. I think it safe to say that they breed from the Gulf coast northward throughout their range. During the breeding season the birds are quite constant singers—a rather feeble effort, but clear, soft and musical, ending in a creaking manner.

Their nests are saddled on horizontal limbs, from fifteen to sixty feet from the ground—rarely below thirty feet, especially in heavily-timbered lands. They are composed of fine grasses, moss, and bits of hornets' nests, interwoven with spider webs and soft strippings from plants, the outside sparingly dotted with lichen. Eggs usually three or four; creamy to greenish white, speckled with reddish brown and lilac, thickest, and sometimes

forming a wreath, around the larger end; in form, oval. A set of four eggs, taken June 16th, 1883, near Ontario, Canada, from a nest in an ironwood tree, fifteen feet from the ground, are, in dimensions: .58 x .45, .59 x .45, .60 x .46, .60 x .47.

***Dendroica pensylvanica* (LINN.).**

CHESTNUT-SIDED WARBLER.

PLATE XXXII.

Migratory; rare. Taken at Leavenworth, in May, 1871, by Prof. J. A. Allen; and near Topeka, May 2d, 1873, by Prof. E. A. Popenoe. I have never been so fortunate as to meet with them in the State.

B. 200. R. 99. C. 124. G. 45, 284. U. 659.

HABITAT. Eastern North America; north to Canada and Manitoba; west to the Great Plains; breeding from about latitude 40° (probably in high, mountainous regions south) northward; south in winter to the Bahamas, eastern Mexico and southern Central America.

SP. CHAR. "*Male*: Upper parts streaked with black and pale bluish gray, which becomes nearly white on the fore part of the back; the middle of the back glossed with greenish yellow. The crown is continuous yellow, bordered by a frontal and superciliary band, and behind by a square spot of white. Loral region black, sending off a line over the eye, and another below it. Ear coverts and lower eyelid, and entire under parts, pure white; a purplish chestnut stripe starting on each side, in a line with the black 'mustache,' and extending back to the thighs. Wing and tail feathers dark brown, edged with bluish gray, except the secondaries and tertials, which are bordered with light yellowish green. The shoulders with two greenish white bands. Three outer tail feathers with white patches near the end of the inner webs. *Female*: Like the male, except that the upper parts are yellowish green, streaked with black; the black 'mustache' scarcely appreciable. The young, in autumn, are very different from either male or female in spring. The entire upper parts are of a continuous light olive green; the under parts white; the sides of the head, neck and breast ash gray, shading insensibly into and tinging the white of the chin and throat. No black streaks are visible above or on the cheeks, and the eye is surrounded by a continuous ring of white, as seen in spring. In this plumage it has frequently been considered as a distinct species. The male, in this spring plumage, may usually be distinguished from the female by possessing a trace (or a distinct stripe) of chestnut on the flanks, the young female, at least, lacking it."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.00	7.70	2.45	2.00	.70	.37
Female . . .	4.80	7.40	2.30	1.90	.70	.36

Iris dark brown; bill black, sometimes the under mandible is bluish at base; legs, feet and claws slaty blue.

These charming little birds frequent the open woods, groves and shrubby growths bordering the fields, prairies and streams, seldom visiting the gardens and shade trees about our dwellings. They are quite common east of the Mississippi River. At Pewaukee, Wisconsin, (where brother and I have so often rambled together,) they are a very common summer resident; breeding in the second growths of shrubby oaks and bushes. They are not naturally suspicious and wild, often allowing a near approach. They search largely for their food among the upper branches, and are expert in catching insects on the wing, darting from their perch and usually returning to the same, much like the true Flycatchers.

Their ordinary call note is a rather feeble "Tsip," which, when alarmed, is uttered in a harsh, chattering manner. Their song is rather short—a few varied, musical notes, resembling that of the Yellow Warbler.

Their nests are placed in the forks of low bushes, and are composed of small stems, grasses and flax-like strippings from plants, rather loosely woven together, and lined with hairs. Eggs usually four, .68 x .50; white, or creamy white, spotted with reddish to dark brown and lilac, thickest and generally tending to form a ring around the larger end; some are sparingly, others profusely marked; in form, oval. A set of four eggs, collected June 15th, 1879, at Pewaukee, Wisconsin, from a nest in the forks of a low bush, in a thick growth, are, in dimensions: .68 x .48, .69 x .50, .70 x .50, .70 x .50.

Dendroica striata (FORST.).

BLACK-POLL WARBLER.

PLATE XXXII.

Migratory; common. Arrive the first to middle of May; begin to return early in September. The bulk leave for the south during the latter part of the month; a few occasionally remain until the last of October.

B. 202. R. 101. C. 122. G. 46, 285. U. 661.

HABITAT. Eastern and northern North America; north to the Arctic coast, accidentally to Greenland; west to the Rocky Mountains, and throughout Alaska, north to the peninsula; breeding from northern New England northward throughout their entire range; south in winter to the Bahamas, Cuba and northern South America.

I have never met with the birds in Mexico or Central America (where I have found most all the other Warblers that I have described), neither can I find any mention of their occurrence, but I feel confident that they do winter in Central America and in eastern Mexico.

SP. CHAR. "*Male*: Crown, nape, and upper half of the head, black; the lower half, including the ear coverts, white, the separating line passing through the middle of the eye. Rest of upper parts grayish ash, tinged with brown and conspicuously streaked with black. Wing and tail feathers brown, edged externally (except the inner tail feathers) with dull olive green. Two conspicuous bars of white on the wing coverts, the tertials edged with the same. Under parts white, with a narrow line on each side of the throat from the chin to the sides of the neck, where it runs into a close patch of black streaks, continued along the breast and sides to the root of the tail. Outer two tail feathers with an oblique patch on the inner web near the end; the others edged internally with white. *Female*: Similar, except that the upper parts are olivaceous, and, even on the crown, streaked with black; the white on the sides and across the breast tinged with yellowish; a ring of the same round the eye, cut by a dusky line through it. The autumnal dress of young birds is very different from that of spring. The upper parts are light olive green, obsoletely streaked with brown; beneath, greenish yellow, obsoletely streaked on the breast and sides; the under tail coverts pure white; a yellowish ring round the eye, and a superciliary one of the same color. In this dress it is scarcely possible to distinguish it from the immature *D. castanea*. The young bird in its first dress is also quite different, again, from the autumnal plumaged birds. The upper parts are hoary grayish, the lower white; each feather of the whole body, except lower tail coverts, with a terminal bar or transverse spot of blackish, those on the upper parts approaching the base of the feathers along the shaft. Wings and tail much as in the autumnal plumage."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.40	8.75	2.80	2.05	.74	.45
Female	5.20	8.50	2.70	2.00	.73	.45

Iris brown; bill—upper and end of lower black, rest pale blue; legs and claws light brown; feet yellowish brown.

These familiar birds are quite common and are pretty generally diffused throughout their range. They are among the last

arrivals in spring and often tarry late in the fall. They select for their summer homes the low woodlands, bordering streams and swamps; but during migration, visit alike the upland groves, waste fields, orchards, gardens, etc., and in their search for food are at home wherever insect life can be found; peeping into the crevices of bark on logs, the bodies and lower branches of trees, skipping about in the tops among the foliage, and often darting here and there to catch, in the manner of the Flycatchers, the passing insects. They are not naturally wild, and usually very easily approached.

Their song, often heard in the early breeding season, consists of a few low, varied notes, uttered in too lisping and wiry a tone to be called musical.

The following is a description of a nest and eggs that I succeeded in finding in a dense undergrowth at Grand Manan, N. B., June 19th, 1880. The nest was built not over two feet from the ground, on a horizontal limb, and against the body of a small spruce tree. It was quite bulky, and made from the tips of fir and spruce twigs, fine rootlets, grasses and slender lichens, and lined thickly with feathers. The eggs (four in number) are, in dimensions (large as compared with measurements given by others): .77x.55, .78x.56, .79x.56, .79x.56; white to creamy buff, speckled with various shades of reddish brown and lilac and a few streak-like blotches of black, chiefly about the larger end, where the markings are rather confluent, forming a wreath upon one of the eggs; in form, oval.

***Dendroica blackburniæ* (Gmel.).**

BLACKBURNIAN WARBLER.

PLATE XXXII.

Migratory; rare. Arrive the first of May; return early in September; leave during the month.

B. 196. R. 102. C. 121. G. 47, 286. U. 662.

HABITAT. Eastern temperate North America; accidental in Greenland; west to the Great Plains, casually to Utah; breeding from the northern United States (probably high, mountainous regions south) northward; south in winter, through the

Bahamas, eastern Mexico and Central America, into South America.

SP. CHAR. "Upper parts nearly uniform black, with a whitish scapular stripe and a large white patch in the middle of the wing coverts. An oblong patch in the middle of the crown, and the entire side of the head and neck (including a superciliary stripe from the nostrils), the chin, throat, and fore part of the breast bright orange red. A black stripe from the commissure, passing around the lower half of the eye, and including the ear coverts, with, however, an orange crescent in it, just below the eye, the extreme lid being black. Rest of under parts white, strongly tinged with yellowish orange on the breast and belly, and streaked with black on the sides. Outer three tail feathers white, the shafts and tips dark brown; the fourth and fifth spotted much with white; the other tail feathers and quills almost black. Female similar; the colors duller; the feathers of the upper parts with olivaceous edges. Autumnal males resemble the females. They have two white bands instead of one; the black stripes on the sides are larger; under parts yellowish; the throat yellowish, passing into purer yellow behind. Autumnal young birds have the same pattern of coloration, but the dark portions are dull grayish umber, with the streaks very obsolete, and the light parts dull buffy white, tinged with yellow on the jugulum; there is neither clear black, bright yellow, nor pure white on the plumage, except the latter on the wing bands and tail patches."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.00	8.15	2.60	1.90	.70	.40
Female . . .	4.75	7.90	2.50	1.80	.70	.40

Iris, legs, feet and claws dark brown; bill black, with base of forks of under white.

This beautiful Warbler inhabits the deep woods, seldom frequenting the open woodlands and orchards, and is usually more common, especially in the middle and eastern portions of its range, than generally supposed to be; a rather silent, solitary, retiring bird, that feeds chiefly in the treetops, where it flits among the leaves in its search for food, and chases the winged insects much like the restless Redstart. For its summer home it selects the coniferous forests, where its song, consisting of a few pleasing, warbling notes, that ends in a squeaky manner, is often heard. Its call note is a rather sharp "Tsip." Mr. Brewster, on "Birds of Winchendon, Massachusetts," gives the following interesting description of a nest, its eggs, etc.:

"On both high and low ground, wherever there were spruces in any numbers, whether by themselves or mixed with other trees, and also to some extent where the growth was entirely of

hemlocks, the Blackburnian Warbler was one of the most abundant characteristic summer birds, in places even outnumbering the Black-throated Green Warbler, although it shunned strictly the extensive tracts of white pines which *D. virens* seemed to find quite as congenial as any of the other evergreens. A set of four eggs was taken June 26, 1887. The nest, which was found by watching the female, was built at a height of about thirty feet above the ground,* on the horizontal branch of a black spruce, some six feet out from the main stem. Its bottom rested securely near the base of a short, stout twig. Above and on every side masses of dark spruce foliage, rendered still denser by a draping of *Usnea* (which covered the entire tree profusely), hid the nest so perfectly that not a vestige of it could be seen from any direction. This nest is composed outwardly of fine twigs, among which some of the surrounding *Usnea* is entangled and interwoven. The lining is of horse hair, fine dry grasses, and a few of the black rootlets used by *D. maculosa*. The whole structure is light and airy in appearance, and resembles rather closely the nest of the Chipping Sparrow. The eggs measure, respectively: .68x.49, .66x.50, .69x.49, .68x.51 inches. They are marked with pale lavender, vandyke brown, mars brown and black. Over most of the shell the markings are fine and sparsely distributed, but about the larger end they become broad and more or less confluent, tending to form a wreath pattern. Some of the black markings are linear, resembling pen scratches. The ground color of these eggs, before blowing, would have been passed for dull white, but, with the removal of their contents, a delicate yet faint greenish tinge appeared, and has since persisted. This greenish tinge was also a characteristic feature of eight eggs (representing two sets) taken by Mr. Bailey, at Winchendon, before my arrival, in 1887."

Eggs four or five, .68x.50; in form, oval.

*They usually build much nearer the ground.

Dendroica dominica albilora BAIRD.

SYCAMORE WARBLER.

Summer resident in the eastern part of the State; rare. Arrive the last of April to first of May; leave the last of September to first of October.

B. —. R. 103*a*. C. 130. G. 48, 287. U. 663*a*.

HABITAT. Mississippi valley; north to southern Michigan and northern Illinois; west to eastern Kansas and Texas; breeding limits but little known; south in winter from the Gulf coast, through Mexico, Honduras and Guatemala.

SP. CHAR. *Adult (sexes alike)*: Above, ash gray, without streaks, the forehead or sides of crown, or both, black. Wings blackish, the middle and greater coverts broadly tipped with white and edged with ash gray; remiges edged with ash gray. Tail dusky, the feathers edged with ash gray, the inner webs of three outer rectrices with a large white patch covering the terminal portion — on the lateral feathers occupying nearly half of the web. A white superciliary stripe, sometimes tinged with yellow anteriorly; a crescentic spot beneath eye, and large space on side of neck, immediately behind auriculars, also white. Lores and auriculars deep black, this continued down each side of the throat, but on sides of breast broken into stripes, which extend along sides to flanks. Chin, throat and jugulum bright gamboge yellow, the first white anteriorly. Rest of lower parts, except as described, white. The plumage of the adult in fall and early winter differs from the spring livery, as described above, only in having the ash gray, and also the white of the abdomen, slightly tinged with brownish. The young in first autumn are essentially similar to autumnal adults, but have the brownish wash or discoloration more distinct, and the markings consequently less sharply defined. (*Ridgway*.)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.20	8.35	2.70	2.20	.65	.45
Female . . .	5.00	8.00	2.55	2.00	.65	.45

Iris brown; bill black; legs, feet and claws olive brown; bottoms of feet greenish yellow.

My knowledge of these birds, from observation, has been very limited. I therefore quote from “Birds of Illinois” Mr. Ridgway’s description of their habits, etc.:

“The Sycamore Warbler is a common summer resident in the bottom lands, where, according to the writer’s experience, it lives chiefly in the large sycamore trees, along or near water courses. On this account, it is a difficult bird to obtain during the breeding season, the male usually keeping in the topmost branches of

the tallest trees, out of gunshot, and often, practically, out of sight, although his presence is betrayed by his loud, very un-Warbler-like song. The song of this species is so much like that of the Indigo Bird, that it requires a practiced ear to distinguish them; the tone is remarkably similar, but there is a difference in the modulation, which, after one becomes thoroughly acquainted with it, renders it distinguishable. In its motions, this warbler partakes much of the character of a creeper, often ascending or descending trunks of trees, or following their branches, much in the manner of a *Mniotilta*. The first specimen which the writer ever saw was creeping about the eaves and cornice of a frame dwelling house, in the center of the town of Mt. Carmel. Very often, however, it could not be distinguished from other Warblers, so far as its actions were concerned."

In my "Revised Catalogue of the Birds of Kansas," I described what I then supposed to be the nest and eggs of these birds. I am now satisfied that the authority is not reliable, upon which the entry was based. I have met with the birds at Neosho Falls, Kansas, on several occasions, during the summer months, and once as early as the last of April; always in or about the large sycamore trees, along the banks of the Neosho River; but have never been so fortunate as to find them nesting anywhere, neither can I find any authentic description of their nests and eggs. They undoubtedly nest in the treetops, like the eastern bird, *D. dominica*.

***Dendroica virens* (GMEL.).**

BLACK-THROATED GREEN WARBLER.

PLATE XXXII.

Migratory; not uncommon. Arrive the last of April to first of May; begin to return the last of August; leave during the month of September and early part of October.

B. 189. R. 107. C. 112. G. 49, 288. U. 667.

HABITAT. Eastern temperate North America; casual to Greenland; west to the edge of the Great Plains; breeds from the northern United States northward; south in winter through eastern Mexico to southern Central America; West Indies.

SP. CHAR. "*Male*: Upper parts, exclusive of wing and tail, clear yellow olive green; the feathers of the back with hidden streaks of black. Forehead and sides of head and neck, including a superciliary stripe, bright yellow. A dusky line from the bill through the eye, and another below it. Chin, throat and fore part of the breast, extending some distance along on the sides, continuous black; rest of under parts white, tinged with yellow on the breast and flanks. Wings and tail feathers dark brown, edged with bluish gray; two white bands on the wing; the greater part of the three outer tail feathers white. *Female*: Similar, but duller; the throat yellow; the black of breast much concealed by white edges; the sides streaked with black. The autumnal male has the black of throat and breast obscured by whitish tips. Females are yellowish white beneath, tinged with grayish towards tail."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.00	7.75	2.50	2.20	.70	.40
Female . . .	4.90	7.40	2.30	2.10	.70	.38

Iris dark brown; bill black; legs, feet and claws dusky; bottoms of feet greenish yellow.

During the breeding season these sylvan birds inhabit the coniferous forests, from my observation preferring the hilly uplands; and, in migration, are more common in the groves and trees skirting the streams than in the heavily wooded bottom lands. They live almost wholly in the upper branches of the trees, and seldom alight upon the ground, except in search of material for a nest, or at the water's edge to bathe. They feed largely upon leaf worms, spiders, beetles and flies, and in their search for the same are in actions much like the Vireos, hopping about among the boughs and capturing occasionally in the air — never in the creeping manner of some of the family.

In the early part of June, 1880, I found them nesting at Digby, Nova Scotia, in the thick growths of hemlock, spruce and pine. I discovered two nests that the birds were building. They were at least thirty feet from the ground. The males were singing in every direction. Their song is quite loud; a pleasing, reed-like chant, the higher notes too shrill to be musical. Their ordinary call note is a common "Chip," or "Tsip."

Their nests have occasionally been found near the ground, but such finds are exceptional; as a rule, they range from about fifteen to fifty feet from the ground. They are usually built on

horizontal forks of a limb and near the end of the boughs. A rather small, compact structure, composed of fine strips of bark, stems of plants, bits of leaves, slender twigs, interwoven with fine grasses and feathers, and lined with hairs and fine, downy shreds from plants. Eggs usually four, .67x.52; creamy white, spotted with obscure lilac, yellowish to red and dark brown, usually with confluent blotches about the larger end; in form, oval to rounded oval.

***Dendroica vigorsii* (AUD.).**

PINE WARBLER.

Migratory; rare. Arrive in April; return the last of September to first of October. The birds have not as yet been found nesting in the State, but I feel confident that they do occasionally breed in the eastern portion. They often remain until late in the fall.

B. 198. R. 111. C. 134. G. 50, 289. U. 671.

HABITAT. Eastern North America; north to New Brunswick and Manitoba; west to the Plains; breeds nearly throughout its range, wintering in the more southern States, the Bermudas and Bahama Isles.

SP. CHAR. "*Spring male:* Upper parts nearly uniform and clear olive green, the feathers of the crown with rather darker shafts; under parts generally, except the middle of the body behind, and under tail coverts (which are white), bright gamboge yellow, with obsolete streaks of dusky on the sides of the breast and body; sides of head and neck olive green like the back, with a broad superciliary stripe; the eyelids and spot beneath the eye very obscurely yellow; wings and tail brown, the feathers edged with dirty white, and two bands of the same across the coverts; inner web of the first tail feather with nearly the terminal half, and of the second with nearly the terminal third, dull, inconspicuous white. *Spring female:* Similar, but more grayish above, and almost grayish white, with a tinge of yellow beneath, instead of bright yellow. *Young:* Umber brown above, and dingy, pale ashy beneath, with a slight yellowish tinge on the abdomen; wing and tail much as in the autumnal adult. Autumnal males are much like spring individuals, but the yellow beneath is softer and somewhat richer, and the olive above overlaid with a reddish umber tint."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.50	9.00	3.00	2.40	.73	.45
Female	5.20	8.50	2.75	2.20	.71	.42

Iris brown; bill dark brown, the under pale at base; legs brown; feet and claws dark brown.

This species, as its name indicates, prefers the pine trees, and usually makes its summer home in the coniferous growths. I have, however, on several occasions met with them during the early summer months in the heavily timbered bottom lands, far away from evergreen trees, and during migration and the winter months they seem to be as much at home in the deciduous trees as among the pines, often visiting the orchards and lowland thickets. I found a few wintering in the cypress swamps in eastern Arkansas, also in Florida, where they are quite common, and usually in small flocks. They are very active birds, and, in their search for insect life, cling like the creepers to the bark of the trees, swing like the Titmouse from the ends of the boughs, and are also at home on the ground.

Their song is weak, a rather monotonous trill; their ordinary call note a "Tsip," and they occasionally lisp a feeble "Che-chee, che-chee, che-chee."

Their nests are usually placed on the boughs of evergreen trees, all the way from eight to sixty feet from the ground. They are composed of soft strippings from bark, stems of plants, pine needles, leaves, caterpillars' silk and downy vegetable matter, and lined with hairs and feathers. Eggs usually four, .70 x .52; grayish to purplish white, speckled and spotted with umber and madder brown and lilac gray, thickest and sometimes forming a ring around the larger end; in form, oval.

***Dendroica palmarum* (Gmel.).**

PALM WARBLER.

PLATE XXXII.

Migratory in the eastern part of Kansas; rather rare (not met with in the western part of the State). Arrive the last of April to first of May; return in September, and leave in October.

B. 208. R. 113. C. 132. G. 51, 290. U. 672.

HABITAT. Interior of North America; casually east of the Alleghanies; north to Great Slave Lake; south to the Bahamas and West Indies; migrating through the Mississippi Valley, and wintering in the Gulf States, from Texas into western Florida and southward.

SP. CHAR. "*Adult, in spring:* Head (above) chestnut red; rest of upper parts brownish olive gray; the feathers with darker centers, the color brightening on the rump, upper tail coverts, and outer margins of wing and tail feathers, to greenish yellow. A streak from nostril over the eye, and under parts generally (including the tail coverts), bright yellow; paler on the body. A maxillary line; breast and sides finely but rather obsoletely streaked with reddish brown. Cheeks brownish (in highest spring plumage chestnut, like the head); the eyelids and spot under the eye olive brown; lores dusky. A white spot on the inner web of the outer two tail feathers at the end. Sexes nearly alike. Autumnal males are more reddish above; under parts tinged with brown; the axillars yellow. This species varies considerably in different stages, but can generally be recognized. Immature specimens resemble those of *D. tigrina*, but differ in the chestnut crown, browner back, less bright rump, brighter yellow of under tail coverts, smaller blotches on tail, no white bands on the wings, etc., as well as in the shape of the bill."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.25	8.00	2.50	2.20	.78	.45
Female . . .	5.15	7.75	2.40	2.00	.75	.42

Iris dark brown; bill dusky, the under sometimes pale at base; legs, feet and claws olive brown; bottoms of feet greenish yellow.

These Warblers are largely terrestrial, and in many respects differ from most of the family; and they are the only birds of this genus that nest upon the ground. They are social in their habits, and outside of their breeding grounds assemble together in small flocks, and in their search for food often associate with the Sparrows and Myrtle Warblers. Like the Pipits, they keep their tails vibrating up and down, especially as they run about on the ground and hop from bush to bush; busy little bodies, that are ever on the move.

During the early spring, when insect life is most abundant among the unfolding leaves and buds, I have occasionally seen them in the treetops, but their natural haunts are within the straggling shrubby growths on grassy lands, in waste fields, orchards, etc.

Their song is but a feeble effort, a grasshopper trill, and their ordinary call note a low "Chip," but when alarmed it is uttered in a sharp, shrill manner.

I have never met with the birds in their summer homes. They are supposed to nest wholly north of the United States,

but their breeding limits are but little known. Mr. Brewer, in "North American Land Birds," gives the following description of their nest and eggs (this was before the separation of the eastern representative, *D. palmarum hypochrysea*, but the locality identifies the nest and eggs):

"The Palm Warbler usually selects for the site of its nest the edge of a swampy thicket, more or less open, placing it invariably upon the ground. This is usually not large, about three and a half inches in diameter and two and a half in depth, the diameter and depth of the cavity each averaging only half an inch less. The walls are compact, and elaborately constructed of an interweaving of various fine materials, chiefly fine dry grass, slender strips of bark, stems of the smaller plants, hynum, and other mosses. Within, the nest is warmly and softly lined with down and feathers.

"Mr. Kennicott met with a nest of this bird at Fort Resolution, June 18th. It was on the ground, on a hummock at the foot of a small spruce, in a swamp. When found, it contained five young birds.

"Their eggs are of a rounded oval shape, and measure .70 of an inch in length by .55 in breadth. Their ground color is a yellowish or creamy white, and their blotches, chiefly about the larger end, are a blending of purple, lilac and reddish brown."

***Dendroica discolor* (VIEILL.).**

PRAIRIE WARBLER.

PLATE XXXII.

Summer resident in eastern Kansas; rare. Arrive the last of April to first of May; begin laying the last of May; leave early in September.

B. 210. R. 114. C. 127. G. 52, 291. U. 673.

HABITAT. Eastern United States; north to southern New England and Michigan; west into Nebraska and Kansas; breeds in suitable localities throughout its United States range; winters in Florida and the West Indies.

SP. CHAR. "*Spring male*: Above, uniform olive green; the interscapular region with chestnut red centers to feathers; under parts and sides of the head, including a broad superciliary line from the nostrils to a little behind the eye,

bright yellow, brightest anteriorly. A well defined narrow stripe from the commissure of the mouth through the eye, and another from the same point curving gently below it, also a series of streaks on each side of the body, extending from the throat to the flanks, black. Quills and tail feathers brown, edged with white; the terminal half of the inner web of the first and second tail feathers white; two yellowish bands on the wings. *Female*: Similar, but duller; the dorsal streaks indistinct. Autumnal specimens have the plumage more blended, but the markings not changed. A young male in autumnal dress is wholly brownish olive green above, the whole wing uniform; the forehead ash, the markings about the head rather obsolete; the chestnut spots on the back and the black ones on the sides nearly concealed."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.80	7.00	2.20	2.00	.70	.43
Female . . .	4.70	6.80	2.15	1.90	.70	.40

Iris brown; bill, legs, feet and claws dark olive brown; bottoms of feet dull greenish yellow.

These small Warblers inhabit the shrubby oak growths upon the prairies, waste fields, orchards, and bushy, weedy growths bordering the woodlands, seldom entering the thick woods or visiting the shrubbery about our dwellings. I have never found them abundant anywhere, or in flocks beyond family groups; usually alone or in pairs. A rather silent bird, uttering now and then a "Chip" or "Chirr" note. They are very active, ever on the move, making short, wavy flights, and hopping about among the branches or bushes and weeds in search of food, occasionally darting a short distance to capture a passing insect. I have never seen one searching for food on the ground, as some writers say they do, and I had a very good opportunity, in the winter of 1885, to observe the birds along the southwest coast of Florida, where they seemed to be the most common in the thick, moist growths, in marked contrast with their habits in their northern summer homes.

Their song is a peculiar musical trill. It commences low, ascends rapidly, and ends with a rising inflection.

Their nests are placed in upright forks of slender branches of bushes and low trees, from two to eight feet from the ground; a rather compact structure, composed of soft fibrous strippings from plants, grasses, leaves, a few feathers, etc., and lined with downy vegetable matter, fine grasses, rootlets and hairs. Eggs

three to five—seldom five, usually four; white, thickly spotted with lilac, purple and umber to vandyke brown; in form; oval. A set of four eggs, collected at Newtonville, Mass., June 22d, 1879, from a nest in upright forks of a hazel bush, are, in dimensions: .65 x .48, .65 x .50, .66 x .50, .70 x .50.

GENUS **SEIURUS** SWAINSON.

“Bill rather sylvicoline, compressed, with a distinct notch; gonys ascending; rectal bristles very short; wings moderate, about three-quarters of an inch longer than the tail, first quill scarcely shorter than the second; tail slightly rounded, feathers acuminate; tarsi about as long as the skull, considerably exceeding the middle toe; under tail coverts reaching within about half an inch of the end of the tail; color above olivaceous, beneath whitish, thickly streaked on the breast and sides; wings and tail immaculate. Nest on the ground, often arched or sheltered by position or dry leaves. Eggs white, marked with red, brown and purple.

“This genus is decidedly sylvicoline in general appearance, although the spots on the breast resemble somewhat those of the Thrushes.”

Seiurus aurocapillus (LINN.).

OVEN-BIRD.

PLATE XXXIII.

Summer resident; very common in the eastern part of the State. Arrive the middle to last of April; begin laying about the middle of May; leave early in September.

B. 186. R. 115. C. 135. G. 53, 292. U. 674.

HABITAT. Eastern North America; north to Hudson's Bay Territory and Alaska; west to the base of the Rocky Mountains; breeding from southern Kansas and Virginia (probably a little south) north to within the Arctic circle; wintering in southern Florida, the Bahamas, West Indies and Mexico to southern Central America.

SP. CHAR. “Above, uniform olive green, with a tinge of yellow. Crown with two narrow streaks of black from the bill, enclosing a median and much broader one of brownish orange. Beneath, white; the breast, sides of the body and a maxillary line streaked with black. The female and young of the year are not appreciably different.”

Mr. Ridgway says: “*Young*: Above, fulvous brown, the wing coverts tipped with lighter fulvous or buffy; lower parts pale fulvous or buffy, very narrowly streaked on breast, etc.; with dusky stripes on top of head very indistinct or obsolete.”

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.00	9.50	3.00	2.30	.86	.45
Female . . .	5.80	9.00	2.80	2.25	.86	.45



PLATE XXXIII.

1. OVEN-BIRD; Male. 2. GRINNELL'S WATER-THRUSH; Female. 3. LOUISIANA WATER-THRUSH; Male. 4. KENTUCKY WARBLER; Male. 5. JUV. FEMALE. 6. HOODED WARBLER; Male. 7. WESTERN YELLOW-BREASTED CHAT; Male. 8. F. female. 9. YELLOW-BREASTED CHAT; Male. 10. Female. 11. HOODED WARBLER; Male. 12. WILSON'S WARBLER; Male. 13. CANADIAN WARBLER; Male. 14. Female. 15. AMERICAN REDSTART; Male. 16. Female. 17. AMERICAN PIPIT; Male. 18. SPRAGUE'S PIPIT; Male.

Iris dark brown; bill—upper black, under pale flesh color, with end dusky; legs flesh color; feet and claws light brown.

The following interesting description of the habits of this bird is taken from "Birds of Illinois," by Ridgway:

"The Golden-crowned Thrush, or Oven-bird, is one of the most generally distributed and numerous birds of eastern North America. It is almost certain to be found in any piece of woodland, if not too wet, and its frequently repeated song, which is not musical, or otherwise particularly attractive, but very sharp, clear, and emphatic, is often, particularly during noonday in midsummer, the only bird note to be heard. It lives much upon the ground, where it may be seen walking gracefully over the dead leaves, or upon an old log, making occasional halts, during which its body is tilted daintily up and down, much in the manner of the Water-Thrushes (*S. motacilla* and *noveboracensis*), but more like the Kentucky Warbler, often to be seen in the same localities. Its ordinary note is a rather faint, but sharp 'Chip,' prolonged into a chatter, when one is chased by another. The usual song is very clear and penetrating, but not musical, and is well expressed by John Burroughs, in 'Wake Robin,' as sounding like the words, 'Teacher, *teacher*; teacher, *teacher*, TEACHER!'—the accent on the first syllable, and each word uttered with increased force and shrillness. But, as Mr. Burroughs truly says, 'He has far rarer song which he reserves for some nymph whom he meets in the air. Mounting by easy flights to the top of the tallest tree, he launches into the air with a sort of suspended, hovering flight, and bursts into a perfect ecstasy of song—clear, ringing, copious, rivaling the Goldfinch's in vivacity, and the Linnet's in melody. This strain is one of the rarest bits of bird melody to be heard. Over the woods, hid from view, the ecstatic singer warbles his finest strains. In the song, you instantly detect his relationship to the Water Wagtail (*Seiurus noveboracensis*)—erroneously called Water-Thrush—whose song is likewise a sudden burst, full and ringing, and with a tone of youthful joyousness in it, as if the bird had just had some unexpected good fortune. For nearly two years, this strain of the pretty warbler was little more than a

disembodied voice to me, and I was puzzled by it as Thoreau was by his mysterious Night Warbler, which, by the way, I suspect was no new bird at all, but one he was otherwise familiar with. The little bird himself seems disposed to keep the matter secret, and improves every opportunity to repeat before you his shrill, accelerating lay, as if it were quite enough, and all he laid claim to. Still, I trust I am betraying no confidence in making the matter public here. I think this is preëminently his love song, as I hear it oftenest about the mating season. I have caught half-suppressed bursts of it from two males, chasing each other with fearful speed through the forest.' "

Reader, if you wish to hear this love song in its fullest power, visit the deep woods in the early summer, as the shades of night deepen, and most of the diurnal birds have retired, for it is then that its lively, resonant voice falls upon the ear unbroken, save by the silvery, flute-like song of the Wood Thrush; and if your heart does not thrill with pleasure, it is dead to harmonious sounds.

Their nests are placed on the ground, generally a depression among the leaves, and hidden under a low bush, log, or overhanging roots; when in an open space, roofed over; a dome-like structure, made of leaves, strippings from plants, and grasses, with entrance on the side. Eggs three to six—rarely six, usually four, .80x.60; white, or creamy white, quite glossy, spotted as a rule rather sparingly over the entire surface, thickest and confluent around the larger end, with pale reddish brown, lilac and umber; in form, rounded oval.

Seiurus noveboracensis notabilis* (GRINN.).

GRINNELL'S WATER-THRUSH.

PLATE XXXIII.

Migratory; rare. Arrive the last of April to first of May (I have several times met with the birds late in May); return early in September; occasionally remain until the last of October.

B. —. R. 116a. C. 137. G. 54, 293. U. 675a.

HABITAT. Western North America, chiefly in interior; east into Mississippi valley, straggling to Illinois and Indiana, etc.; north into the Arctic regions. Found breeding in northern

*Entered in my "Catalogues of the Birds of Kansas" as *S. noveboracensis*.

Alaska; southern breeding limits unknown; probably breed in suitable localities from the northern United States northward throughout its range; south in winter to Lower California, Mexico and Central America. (I have a female in "The Goss Ornithological Collection," which I shot February 11th, 1883, at San Jose, Guatemala.)

SP. CHAR. Above, dark grayish brown, the feathers of the pileum with indistinctly darker centers. Beneath, yellowish white, the throat thickly spotted, and the breast and sides heavily streaked, with blackish dusky; a superciliary stripe of pale fulvous; a dusky stripe along upper edge of the auriculars. Lores crossed by a distinct streak of black. Center of the abdomen immaculate; lower tail coverts with central streaks of grayish dusky; lining of the wing smoky gray. The plumage of the typical specimen of this bird is in all respects, so far as I can see, quite identical with that of ordinary darker plumaged specimens of *S. noveboracensis*, such as occur more commonly west of the Alleghanies, except that the superciliary stripe does not extend so far back and the streaks on the breast are broader; the former character may be merely apparent, however, and owing to the "make-up" of the skin. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.15	9.80	3.10	2.15	.82	.50
Female	5.90	9.40	2.90	2.00	.82	.50

Iris dark brown; bill brownish black, under pale at base; legs, feet and claws pale brown.

These terrestrial birds frequent the low woodlands bordering streams and ponds. I have never met with them on high grounds, nor far from water. They move about with a graceful step, almost continually vibrating their tails, like the Pipits, and for this reason are usually known as Wagtails. They feed chiefly upon the small forms of aquatic life, and often wade about in the water in search of the same.

Their call note is a Sparrow-like "Chip;" their song, quite loud, clear and musical. I have never met with the birds on their breeding grounds. The following description of their nests, etc., is taken from Mr. Nelson's "Report upon Natural History Collections in Alaska:"

"At Fort Yukon, Dall found a nest containing two eggs, in a bushy spruce, on the first of June; but he saw none of the birds at Nulato, and considered it uncommon. My own experience at the Yukon mouth proves the bird to be one of the

commonest species breeding at that place. Its favorite haunts, in the midst of dense thickets, shelter it from the observation of one not accustomed to its song, which, however, is one of the most striking that reaches the ear of the traveler in that region; but the songster, perched on some low branch, is quick to take alarm, and skulks away beyond the sight of one penetrating its haunts.

“At Fort Yukon, Lockhart shot a bird from its nest on June 21st. This nest was concealed under a small pile of drift close to the river bank, under a large willow tree. Another nest taken near by was similarly placed, and made of moss, lined with very fine grass. In the National Museum Collection is a nest containing five eggs, from Peale’s River, which is composed of moss and grass, and lined with mouse and rabbit fur. There are also other eggs in the same collection, which were obtained from Fort Yukon during the middle of June.”

I am indebted to Capt. Chas. Bendire for the following dimensions of the set of eggs from Peale’s River: .72x.54, .72x.54, .72x.54, .74x.55, .78x.56. He says that this set and other eggs of this bird in the United States National Museum are not distinguishable, in color or form, from the eggs of *S. motacilla*.

***Seiurus motacilla* (VIEILL.).**

LOUISIANA WATER-THRUSH.

PLATE XXXIII.

Summer resident; common in the eastern part of the State. Arrive about the middle of April; begin laying as early as the 8th of May; remain until late in the fall.

B. 188. R. 117. C. 138. G. 55, 294. U. 676.

HABITAT. Eastern United States; north to southern New England and southern Minnesota; west to the edge of the Great Plains; breeds in suitable localities throughout its United States range; winters in the Gulf States, West Indies, eastern Mexico, into Central America.

SP. CHAR. “Bill longer than skull. Upper parts olive brown, with a shade of greenish. A conspicuous white superciliary line from the bill to the nape, involving the upper lid, with a brown one from the bill through the eye, widening behind. Under parts white, with a very faint shade of pale buff behind,

especially on the tail coverts. A dusky maxillary line; the fore part of breast and sides of body with arrow-shaped streaks of the same color. Chin, throat, belly and under tail coverts entirely immaculate. Sexes similar. Young not seen.

"Autumnal specimens have a more or less strong wash of ochraceous over the flanks and crissum, and the brown above rather darker and less grayish than in spring birds."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.20	10.00	3.25	2.30	.90*	.55
Female	6.00	9.75	3.15	2.15	.90	.53

Iris dark brown; bill brownish black to dusky; legs, feet and claws flesh color.

This species, like Grinnell's Water Thrush, inhabits the low bottom, timbered lands bordering the edges of water, preferring running streams; a shy, retiring bird, that runs for cover the moment it sights an intruder, but is so restless that, if you will stand motionless, it will reappear in a short time and continue its rambles in quest of food, chiefly insect life, minute snails, etc., and in search for the same will often wade until its body touches the water. Its motions are peculiar: a continued tilting of the body and jerking of the tail. Its flights are easy and direct, but low, and usually short. It is one of our earliest and sweetest songsters; sings from the perch, with tremulous wings and inflated throat, a rich and almost unrivaled song of power and melody. Its ordinary note, a sharp "Chip," is often heard.

Their nests are placed on the ground, under projecting roots, old logs and fissures in rocks, on the banks of streams and ponds, and near the water's edge. They are composed of leaves and mosses, and lined with fine grasses, fibers and hairs; the foundation is wholly of leaves, with mud generally between the layers to hold them in place. Eggs three to six—usually four or five, .76x.59 (they vary in size); white to creamy white, spotted with varying shades of reddish brown, and shell stains of lilac gray, usually thickest about the larger end; in form, oval to rounded oval.

GENUS *GEOTHLYPIS* CABANIS.

"Bill sylvicoline, rather depressed, and distinctly notched; rectal bristles very short or wanting. Wings short, rounded, scarcely longer than the tail; the first quill shorter than the fourth. Tail long, much rounded or graduated;

legs stout; tarsi elongated, as long as the head; olive green above, belly yellow; tail feathers immaculate."

SUBGENUS OPORORNIS BAIRD.

"Bill sylvicoline, rather compressed; distinctly notched at tip; rictal bristles very much reduced; wings elongated, pointed, much longer than tail; the first quill nearly or quite the longest. Tail very slightly rounded; tail feathers acuminate, pointed; the under coverts reaching to within less than half an inch of their tips. Tarsi elongated, longer than the head; claws large, the hinder one as long as its digit, and longer than the lateral toes. Above, olive green; beneath, yellow; tail and wings immaculate."

Geothlypis formosa (WILS.).

KENTUCKY WARBLER.

PLATE XXXIII.

Summer resident; common in eastern Kansas. Arrive the last of April; begin laying about the 20th of May; leave the last of August to first of September.

B. 175. R. 119. C. 140. G. 56, 295. U. 677.

HABITAT. Eastern United States, chiefly west of the Alleghanies; north to southern New England and southern Wisconsin; west to the edge of the Great Plains; south in winter to the West Indies, eastern Mexico and southern Central America; breeds throughout its United States range.

SP. CHAR. Entire lower parts pure gamboge yellow; forehead and sides of head black, with a bright yellow superciliary stripe, involving hinder as well as upper border of eye; feathers of crown tipped with slate gray. (Sexes alike in color.) *Adult*: Above, plain bright olive green (except as described above); beneath, continuous pure gamboge yellow; in winter similar, but gray tips to feathers on top of head more tinged with brown, and black on side of head somewhat obscured by grayish brown tips to the feathers. *Young*: Above, olive brown (including top and sides of head), the back and scapulars more decidedly brown; wing coverts tipped with light tawny brown, wings otherwise, and tail as in adult; beneath, plain light dull olive, paler and more yellowish posteriorly; no black nor yellow on sides of head. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.50	8.60	2.70	2.15	.87	.45
Female . .	5.15	8.10	2.50	1.90	.85	.42

Iris dark brown; bill dark brown, with under pale at base; legs, feet and claws pale flesh color.

This large Warbler inhabits the lowland thickets, usually near the water, and prefers for its haunts the dense undergrowths

in the timber. A shy, retiring bird, that seldom visits the open woodlands, and being preëminently terrestrial, rarely ever mounts into the upper branches of the trees, and is only to be looked for in the low bushes and on the ground; and were it not for its sharp "Tsip," and oft-repeated loud song of three notes, "Tweedlé, tweedlé, tweedlé," (that sounds much like the Maryland Yellow-throat,) its presence would be largely overlooked, even where very abundant, as it generally is throughout its range in the Mississippi valley.

The birds are very active and restless, running about over the ground, hopping among the bushes, climbing the weed stalks, examining the old moss-covered logs and fallen trees, in quest of insect life, occasionally eating pokeberries and other small berries in their season. In habits they are much like the Oven-bird and have the same tilting motions.

Their nests are placed on the ground and artfully concealed in the thick growths. The outside or base is composed of a loose structure of leaves, stems and wide blades of grass, upon which a more compact inner nest is built of the finer grasses, stems and rootlets, and lined with horse hair. Eggs, usually four or five, occasionally six, .72 x .56; white, or creamy white, finely dotted with umber, reddish brown and pale lilac, thickest about the larger end; in form, oval.

SUBGENUS GEOTHYLPIS CABANIS.

Tail not decidedly shorter than wing (often longer), with less than basal half concealed by the coverts; first quill shorter than fifth (often shorter than sixth); outstretched feet falling far short of tip of tail. (*Ridgway*.)

Geothlypis philadelphia (WILS.).

MOORNING WARBLER.

PLATE XXXIII.

Migratory; rare. Arrive about the middle of May; return early in September, and leave the latter part of the month.

B. 172. R. 120. C. 142. G. 57, 296. U. 679.

HABITAT. Eastern North America; accidental to Greenland; west to the Great Plains; breeding in the higher Alleghanies and from New England and eastern Dakota northward; south

in winter into southern Central America. (No record as yet of its occurrence in the West Indies or Mexico.)

SP. CHAR. No white on eyelids, (except sometimes a slight indication in females or immature birds.) *Adult male*: Head, neck and chest deep ash gray, the throat and chest more or less mixed with black, this often forming a distinct patch posteriorly; lores dusky or dusky grayish; rest of lower parts pure gamboge yellow. *Adult female*: Similar to male, but chin and throat dull whitish or brownish white (sometimes tinged with yellow); the chest dull ash gray or grayish brown (sometimes inclining to dull yellowish); rest of head and neck dull gray, brownish gray or olive. *Young, in first autumn*: Similar to adult female, but more tinged with brownish, the throat and chest more suffused with yellowish. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.50	8.00	2.45	2.20	.82	.43
Female	5.25	7.75	2.35	1.95	.80	.42

Iris dark brown; bill dusky, with basal half of under whitish; legs, feet and claws flesh color.

This species frequents the edges of low, prairie woodlands, bushes and weeds bordering ponds and marshy places, seldom entering the woods or tall thickets. A rather unsuspicious bird, that will usually allow a near approach; and, as a rule, rather silent, occasionally uttering a low "Tsip." Its alarm note is, however, a harsh Wren-like scold. I never heard it except upon one occasion, when I was attracted to the bird by the peculiar sound, and found it fluttering about with ruffled feathers, in a growth of sunflowers at the edge of a slough, and soon discovered the cause—a medium-sized water snake. The bird is in "The Goss Ornithological Collection." Location, Neosho Falls, Kansas; date, September 12, 1881.

I am not positive that I ever heard its song. Mr. Burroughs likens it to that of the Kentucky Warbler, and Mr. Maynard says: "Its song is much finer than that of the Maryland Yellowthroat, being a low, clear warble, and is given early in the morning, while the bird is perched in some slightly-elevated situation." The birds are very similar in their food, habits and actions to the Western Yellowthroat.

Very little is known in regard to their nesting habits. Mr. Burroughs, in "Wake Robin," describes a nest found near the headwaters of the Delaware River, in New York, in a low part

of the woods, where the larger trees began to give place to a thick second growth that covered an old "bark peeling" of hemlock wood. He says: "It was placed but a few feet from the maple tree, in a bunch of ferns, and about six inches from the ground. It was quite a massive nest, composed entirely of the stalks and leaves of dry grass, with an inner lining of fine, dark-brown roots. The eggs, three in number, were of light flesh color, uniformly specked with fine brown specks. The cavity of the nest was so deep that the back of the sitting bird sank below the edge."

And Mr. Ridgway, in his "Manual," says: "Nest near the ground, in clumps of weeds, often in open places in mountains. Eggs .71x.53; white, or buffy white, speckled on larger end with dark brown and lilac gray, often mixed with a few fine black 'pen lines,' and sometimes touched with rusty stains. (Much like the eggs of *G. trichas*.)"

***Geothlypis trichas occidentalis* BREWST.**

WESTERN YELLOW-THROAT.

PLATE XXXIII.

Summer resident; abundant. Arrive from the middle to last of April; begin laying about the 20th of May; leave during the month of September.

B. —. R. —. C. —. G. —, 297. U. 681a.

HABITAT. Western United States; east to the Mississippi valley; north to the British possessions; (Manitoba. *Seton*); south in winter from the southern United States, through Central and western Mexico, to Guatemala; breeding throughout its United States range.

SP. CHAR. of *G. trichas*. *Adult male*: With black mask, bordered behind by ashy or white. *Adult female*: Without any black, ashy or white about head, the whole top and sides of head being grayish brown or olive, often tinged with reddish brown on crown; yellow of lower parts paler, and usually more restricted than in male; nearly the whole lower surface sometimes dull yellowish white. *Adult male, in winter*: Same as in summer, but more or less washed with brown above, especially on top of head, and the black of mask somewhat obscured by slight brownish or light-colored tips to feathers, and light grayish or whitish border, more or less concealed by brown tips. *Young male, in first winter*: Similar to adult, but mask much less distinct, often merely indicated. *Young*: Plain olive above; pale olive yellowish beneath. Lower parts not en-

tirely yellow; the anal region, at least, buffy whitish, and flanks either dull buffy whitish or brownish, distinctly different from color of belly; wing less than 2.40; smaller and duller in color; the whole belly and sides buffy whitish, the bright yellow being confined to chin, throat, chest, breast and under tail coverts; black mask bordered posteriorly by a band (usually narrow) of light ashy gray. (*Ridgway*.)

This subspecies, *G. trichas occidentalis*, differs from the above description in being larger and brighter colored, the lower parts entirely bright yellow, except anal region and flanks; black mask bordered posteriorly by a band (usually broad) of white or grayish white; yellow of throat, etc., richer, and olive green of posterior upper parts more yellowish. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.30	7.10	2.30	2.30	.80	.45
Female	4.90	6.75	2.15	2.15	.78	.42

Iris brown; bill dusky, under usually pale at base; legs, feet and claws pale brown to flesh color.

These pretty birds are quite common throughout their range. They frequent the low, weedy thickets and brier patches, preferring the small growths fringing the shallow streams, or bordering prairie sloughs. They are not naturally timid or shy, but a restless, active bird, ever upon the move, hopping about in the bushes, climbing the weed stalks, and searching among the leaves and upon the ground for insect life (chiefly leaf eaters), stopping now and then to take a peep at an intruder, at such times often uttering a rather harsh, scolding note, very different from its ordinary "Chup."

The males during the breeding season cheer their mates with a pretty song, "Whichitee, whichitee, whichitee," and in the early part of the time, when full of love and vigor, occasionally pour forth their song in the air, rising a short distance above the growths, and dropping back with dangling legs and a peculiar jerky motion of the wings and tail.

Their nests are usually placed on the ground, but I have found them in bushes, two or three feet from the ground. They are composed outside loosely of leaves and grasses; inside, of wire-like stems from plants and rootlets nicely interwoven together. Eggs four or five (occasionally six), .68x.50. They vary greatly in size and distribution of the markings; the ground color is clear white to creamy white, spotted and sometimes blotched

with umber, reddish to very dark brown and obscure lilac, thickest around the larger end; in form, oval.

GENUS **ICTERIA** VIEILLLOT.

"Bill broad at base, but contracting rapidly and becoming attenuated when viewed from above; high at the base (higher than broad opposite the nostrils); the culmen and commissure much curved from the base; the gonys straight. Upper jaw deeper than the lower; bill without notch or rictal bristles. Nostrils circular, edged above with membrane, the feathers close to their borders. Wings shorter than tail, considerably rounded; first quill rather shorter than the sixth. Tail moderately graduated; feathers rounded but narrow. Middle toe, without claw, about two-thirds the length of tarsus, which has the scutella fused externally in part into one plate."

Icteria virens (LINN.).

YELLOW-BREASTED CHAT.

PLATE XXXIII.

Summer resident; abundant in the eastern part of the State. Arrive the last of April to first of May; begin laying about the middle of May; leave the last of August to first of September.

B. 176. R. 123. C. 144. G. 59, 298. U. 683.

HABITAT. Eastern United States; north to southern New England, Ontario, Iowa (Minnesota?); west to the edge of the plains; breeding throughout its United States range; south in winter through eastern Mexico to Guatemala.

SP. CHAR. Third and fourth quills longest; second and fifth little shorter; first nearly equal to the sixth; tail graduated; upper parts uniform olive green; under parts, including the inside of wing, gamboge yellow as far as nearly half way from the point of the bill to the tip of the tail; rest of under parts white, tinged with brown on the sides; the outer side of the tibia plumbeous; a slight tinge of orange across the breast. Forehead and sides of the head ash, the lores and region below the eye blackish; a white stripe from the nostrils over the eye and involving the upper eyelid; a patch on the lower lid, and a short stripe from the side of the lower mandible, and running to a point opposite the hinder border of the eye, white. Female like the male, but smaller; the markings indistinct; the lower mandible not pure black. Both sexes in winter apparently have the base of lower mandible light colored, the olive more brown, the sides and crissum with a strong ochraceous tinge. *First plumage:* Remiges, rectrices, etc., as in the adult. Head, superiorly and laterally, uniform grayish olive, with a barely appreciable whitish supraloral line and orbital ring and without black markings. Whole throat pale ash gray (almost white to the chin), stained laterally and anteriorly with yellow; entire breast gamboge yellow, obscured with olivaceous gray across the jugulum (probably entirely gray at first, the yellow feathers being probably the beginning of the first moult); abdomen white; flanks and crissum pale buff. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.35	10.00	3.20	3.20	1.00	.53
Female . . .	7.10	9.70	3.10	3.10	1.00	.53

Iris brown; bill black; sometimes the under is pale bluish at base; legs and feet dark blue; claws horn blue.

These peculiar birds inhabit the tangled thickets along the prairie streams, and dense low undergrowths in the open woods. They subsist chiefly upon beetles and other forms of insects, and berries in their season. During the fall and winter months they are shy and silent, but, in the early part of the breeding season, very noisy and eccentric in their actions. They are happily described by Audubon, as follows:

“As in other migratory species, the males precede the females several days. As soon as they have arrived, they give free vent to their song at all hours of the day, renewing it at night when the weather is calm and the moon shines brightly, seeming intent on attracting the females by repeating in many-varied tones the ardency of their passion. Sometimes the sounds are scarcely louder than a whisper; now they acquire strength; deep guttural notes roll in slow succession, as if produced by the emotion of surprise; then others, clear and sprightly, glide after each other, until suddenly, as if the bird had become confused, the voice becomes a hollow bass. The performer all the while looks as if he were in the humor of scolding, and moves from twig to twig among the thickets with so much activity, and in so many directions, that the notes reach the ear, as it were, from opposite places at the same moment. Now the bird mounts in the air, in various attitudes, with its legs and feet hanging, while it continues its song and jerks its body with great vehemence, performing the strangest and most whimsical gesticulations; the next moment it returns to the bush. If you imitate its song, it follows your steps with caution, and responds to each of your calls, now and then peeping at you for a moment, the next quite out of sight. Should you have a dog which will enter its briery retreat, it will skip about him, scold him, and frequently perch or rise on wing above the thicket, so that you may easily shoot it.

“The arrival of the females is marked by the redoubled exer-

tions of the males, who now sing as if delirious with the pleasurable sensations they experience. Before ten days have elapsed, the pair begin to construct their nest, which is placed in any sort of bush or brier, seldom more than six feet from the ground, and frequently not above two or three. It is large, and composed externally of dry leaves, small sticks, strips of vine bark and grasses, the interior being formed of fibrous roots and horse hair."

Eggs three to five (normally four), .89 x .67; glossy or pinkish white, minutely spotted and sometimes blotched with different shades of reddish brown and lilac gray, thickest and often forming a wreath around the larger end. They vary greatly in form, size, and in the amount of markings.

***Icteria virens longicauda* (LAWR.).**

LONG-TAILED CHAT.

Summer resident in the western part of the State; not uncommon. Arrive early in May; begin laying about the 20th of May; leave in August.

B. 177. R. 123a. C. 145. G. —, 299. U. 683a.

HABITAT. Western United States; east to the eastern edge of the Great Plains; south into Mexico; breeding throughout its United States range.

SP. CHAR. "Above, olive gray; the white malar stripe, wings and tail longer than *I. virens*; in other respects similar."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.50	10.10	3.25	3.50	1.00	.55
Female	7.25	9.85	3.15	3.30	1.00	.55

Iris brown; bill and claws black; legs and feet dark olive brown.

This western form of the Yellow-breasted Chat is precisely similar in habits and actions. In my "Revised Catalogue of the Birds of Kansas," I stated that their notes and song were slightly different. In this I think I was mistaken.

The voice of the Chat is varied and peculiar, and its tone and accent depend largely upon the vigor of the bird.

Their nesting places, nests and eggs are also correspondingly alike.

GENUS **SYLVANIA** NUTTALL.

"Bill broad, depressed; the lateral outlines a little concave; the bristles reaching not quite half way from nostrils to tip. Culmen and commissure nearly straight to near the tip. Nostrils oval, with membrane above. Wings pointed, rather longer than the nearly even but slightly rounded tail; first quill shorter than the fourth, much longer than the fifth; the second and third quills longest. Tarsi rather lengthened, scutellar divisions rather indistinct; the middle toe, without claw, about three-fifths the tarsus.

"This genus is distinguished from *Setophaga* mainly by stouter feet and longer toes, shorter and more even tail, narrower bill, etc. The species are decidedly muscicapine in general appearance, as shown by the compressed bill with bristly rictus. The type (*S. mitrata*) is very similar in character of bill to *Dendroica castanea*, but the wings are much shorter; the tail longer and more graduated; the legs and hind toe longer, and the first primary shorter than the fourth (.15 of an inch less than the longest), not almost equal to the longest. The species are plain olive plumbeous above, and yellow beneath."

***Sylvania mitrata* (Gmel.).**

HOODED WARBLER.

PLATE XXXIII.

Summer resident in eastern Kansas. I have never met with the birds in the middle or western part of the State. Arrive the last of April; begin laying the last of May; leave during the month of September.

B. 211. R. 124. C. 146. G. 60, 300. U. 684.

HABITAT. Eastern United States; north to Connecticut, New York, Iowa, etc.; west to eastern Nebraska and Texas; south in winter to the West Indies, eastern Mexico and southern Central America. Probably breeds throughout its United States range.

SP. CHAR. Wing without any markings. Upper parts olive green. Inner webs of outer tail feathers with white patches. *Adult male:* Forehead and ear coverts gamboge yellow; rest of head and neck, including chest, uniform deep black; rest of lower parts pure gamboge yellow. *Adult female:* Similar to the male, but with black of head usually much less distinct, sometimes wholly absent, that of upper portions being replaced by olive green, that of the throat, etc., by gamboge yellow. *Young, in first autumn:* Similar to adult female, without black on head. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.25	8.25	2.65	2.35	.77	.40
Female . .	5.00	7.90	2.50	2.30	.76	.38

Iris brown; bill black; legs and feet pale flesh color; claws light bluish white.

These beautiful flycatching Warblers frequent the thickets and rank, weedy growths fringing the streams, the undergrowths in open woods, and swampy grounds in the canebrakes and rushes. They seldom visit the habitations of man, preferring the unfrequented and secluded places. They live almost wholly in the bushes and lower branches of the trees, occasionally visiting the upper branches, especially when the trees are budding and in blossom. A lively, graceful bird, that has somewhat the habits of the Redstart in spreading and closing the tail, but is less nervous and flitty. Upon the wing, they glide swiftly and easily, and are expert flycatchers—in fact, subsist chiefly upon insects caught in the air; failing to catch at the first dash, instead of returning to their perch, like most of the family, they follow the insect in its windings until captured.

During the early breeding season, the males enliven the woods with their familiar song. Mr. Langille, in "Our Birds in their Haunts," says that the birds have two distinct songs, which he thus describes: "'Cheree, cheree, cheree, chi-di-ee'—the first three notes with a loud, bell-like ring, and the rest in very much accelerated time, and with the falling inflection." This one I have often heard, the following never: "'A strange, whistling melody, 'Whee-ree, whee-ree-eeh,' with a marked emphasis on the second syllable, and a still more marked one on the last. Part of the time this utterance was somewhat varied, a few notes being sometimes added, and again a few dropped." Their call, or alarm note, "Tship," is clear and sharp.

Their nests are built in low bushes, on bottom and marshy lands. They are composed of leaves, strippings from plants and vines, grasses, interwoven with a cotton-like substance, and occasionally spider webs, and lined with fine, hair-like stems. Eggs three to five (usually four), .70 x .52; white or pale yellowish white, speckled or spotted chiefly around the larger end with reddish brown and pale lilac, with occasionally blackish specks; in form, oval to rounded oval. (They vary in size and in amount of markings.)

Sylvania pusilla (WILS.).

WILSON'S WARBLER.

PLATE XXXIII.

Migratory; common. Arrive the last of April to the first of May; begin to return the last of August; leave in September.

B. 213. R. 125. C. 147. G. 61, 301. U. 685.

HABITAT. Eastern and northern North America; north to Hudson's Bay Territory and Alaska; west to and including the Rocky Mountains (replaced on the Pacific coast north to southern Alaska by *S. pusilla pileolata*); breeding from the northern United States, and in the higher Rocky Mountains south, northward to the Arctic coast; south in winter, through eastern Mexico, into southern Central America.

SP. CHAR. "Forehead, line over and around the eye, and under parts generally, bright yellow. Upper parts olive green; a square patch on the crown lustrous black. Sides of body and cheeks tinged with olive. No white on wings or tail. Female similar, the black of the crown replaced by olive green."

Young: In first autumn, without the black on crown; otherwise similar.

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male.....	5.00	7.00	2.25	2.15	.70	.35
Female...	4.80	6.75	2.15	2.10	.70	.33

Iris dark brown; bill—upper dusky, under pale; legs, feet and claws pale brown; bottoms of feet greenish yellow.

This little black-capped beauty frequents the thickets and undergrowths in open woods, preferring for its haunts the willows and small cottonwoods fringing the streams, where it hops restlessly about among the branches, not in the prying, peeping manner of the worm-eating Warblers, but rather upon the lookout for winged insects, which it catches largely upon the wing, darting off to snap a beetle from a leaf or to chase a fly; a pretty, graceful bird, that in its movements hops and glides about with scarcely any of the usual fussy, jerky motions of its genus. In their northward flights, the males enliven the air with their short, soft, pleasing song, which Nuttall says resembles "'Tsh-'tsh-'tsh-'tshea;" to my ear it sounds more like "Zee-zee-zee-zee-e." But it is impossible to convey in words or notes the life-like, thrilling melody of song. I care not how low or

humble it may be, it has a soothing, soul-stirring, indescribable charm. On their return they are silent, barring their feeble call note, "Tsip."

I have met with the birds, in the early summer months, in the high mountains of Colorado, where they occasionally breed, but failed to find their nests. They are placed in a depression in the ground, usually beneath a bush, and are composed almost wholly of leaves and grasses, and lined with the finer grasses and hairs. Eggs four or five, .60x.48; white, or creamy white, speckled with reddish brown and pale lavender, thickest about the larger end; in form, oval.

***Sylvania canadensis* (LINN.).**

CANADIAN WARBLER.

PLATE XXXIII.

Migratory in the eastern part of the State; rare. Arrive the last of April to first of May; begin to return in August; leave in September.

B. 214. 215. R. 127. C. 149. G. 62. 302. U. 686.

HABITAT. Eastern North America; north to Newfoundland, southern Labrador and Lake Winnipeg; west to Minnesota, eastern Nebraska and Texas; breeding from southern New England, Wisconsin, etc., northward; south in winter, through eastern Mexico and Central America, into northern South America.

SP. CHAR. "Upper parts bluish ash; a ring round the eye, with a line running to the nostrils, and the whole under part (except the tail coverts, which are white), bright yellow. Centers of the feathers in the anterior half of the crown, the cheeks, continuous with a line on the side of the neck to the breast, and a series of spots across the fore part of the breast, black. Tail feathers unspotted. Female similar, with the black of the head and breast less distinct; in the young obsolete."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.50	8.00	2.55	2.35	.75	.40
Female . . .	5.25	7.65	2.40	2.20	.73	.38

Iris dark brown; bill dusky, pale beneath; legs and feet greenish flesh color; claws pale brown.

This species is quite common east of the Mississippi River. Rather retiring, solitary birds, that frequent the undergrowths in the deep, low woodlands, preferring for their haunts the

tamarack swamps in the valleys, and the moist, springy lands upon the hills and mountain sides. In other respects they do not seem to differ in habits or actions from their flycatching cousin, *S. pusilla*.

In the early breeding season the males pour forth their short, peculiar, pleasing song, as they flit from bush to bush; and in their hurried northward flights we catch snatches of their simple chant; but they are silent on their return, save an occasional "Tsip." Mr. Brewster, in "Notes from Observation on the Birds of Winchendon, Massachusetts," gives the following minute description of their nest and its location:

"Throughout the spruce swamps, the Canadian Warbler was everywhere abundant. A brood of young, barely able to fly, were met with June 25th, 1887, and the next day Mr. Purdie took a set of eggs rather far advanced in incubation. The nest was in the face of a low, sphagnum-covered mound, about eighteen inches above its base. In the soft mould behind the outer covering of sphagnum, the birds had excavated a cavity about the size of one's fist. In the bottom of this cavity was the nest, a loosely formed, but nevertheless neat structure, composed outwardly of dry leaves, and lined with pine needles, black rootlets, and a little horse hair. The bird entered by a small round hole, the bottom of which was about on a level with the top of the nest. All the nests (a dozen or more) of this species which I have examined were built like the one just described, although the height above the ground has varied, one which I took at Lake Umbagog, in 1879, being higher than my head, in a patch of moss that covered the face of a perpendicular cliff. I have yet to see a nest placed on the ground and open at the top, as most of the book descriptions indicate."

Eggs three to five, .68 x .51; white, or buffy white, speckled or spotted, chiefly about the larger end, with reddish brown and lilac gray; in form, oval.

GENUS *SETOPHAGA* SWAINSON.

"Bill much depressed, the lateral outlines straight towards tip. Bristles reach half way from nostril to tip. Culmen almost straight to near the tip; commissure very slightly curved, Nostrils oval, with membrane above them.

Wings rather longer than tail, pointed; second, third and fourth quills nearly equal; first intermediate between fourth and fifth. Tail rather long, rather rounded; the feathers broad, and widening at ends, the outer web narrow. Tarsi with scutellar divisions indistinct externally. Legs slender; toes short, inner cleft nearly to base of first joint, outer with first joint adherent; middle toe without claw, not quite half the tarsus."

***Setophaga ruticilla* (LINN.).**

AMERICAN REDSTART.

PLATE XXXIII.

Summer resident; common in suitable localities; abundant in migration. Arrive the last of April to first of May; begin laying the last of May; leave in September.

B. 217. R. 128. C. 152. G. 63, 303. U. 687.

HABITAT. Eastern North America; north to Hudson's Bay and Fort Simpson; west to and including the Rocky Mountains; breeding from the Gulf States northward. Winters in the West Indies and southern Mexico, southward to northern South America.

SP. CHAR. Belly white; basal portion of secondaries and quills, and basal half (or more) of tail feathers (except middle), light salmon red or orange red in adult male, yellow in female and young male; sexes very unlike in coloration. *Adult male:* Uniform glossy black, relieved by light red basal portion of secondaries, quills and tail feathers, and sides of breast with a patch of the same (varying from rich orange red to salmon pink and orange yellow); belly and lower tail coverts white, the latter usually with blackish central spots. *Adult female:* Pattern of coloration as in male, but black replaced above by grayish olive, and on throat, etc., by grayish white; wing and tail markings, and patches on sides of breast, yellow. *Young male:* Similar to adult female, but browner above, the colored areas usually inclining more to orange or salmon color; after first winter, the plumage interspersed with glossy black feathers. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.25	7.70	2.45	2.45	.65	.40
Female . . .	5.10	7.50	2.35	2.30	.65	.40

Iris brown; bill and claws black; legs and feet dark brown.

This sprightly, handsome species, a sort of connecting link between the Warblers and Flycatchers, frequents the parks, groves and deep woods, preferring the latter for its summer home. It lives largely in the treetops, and flits restlessly about with outspread tail and open wings, making all the display possible of its jetty black and rich orange plumage; darting here

and there to catch a passing fly or gnat, or pick an insect from the bark or leaves, snapping its bill at every capture; busy, nervous bodies, that cannot be content at rest.

They are not naturally shy or timid, and hop and fly about regardless of an intruder, uttering occasionally a sharp "Chip." Their song, heard at short intervals in the early breeding season, and occasionally toward its close, is also uttered without a pause in their movements, and often in hurried snatches. A varied song, quite loud and shrill, or soft and pleasing, as the spirit moves them. At times it sounds much like that of the Yellow Warbler, but not so loud and musical.

Their nests are built in small trees, usually six to ten feet from the ground, (but I have found their nests all the way from three to thirty feet from the ground,) usually placed within and woven around three or more small, upright branches; composed of stems, rootlets, strippings from plants, and a soft, fibrous, cottony substance, which is worked in and covers the outside; the inside is lined with fine stems, hairs, and occasionally a few feathers; a neat, compact structure. Eggs three to five (usually four), .65x.50; cream to greenish white, dotted with fine specks of pale yellowish to reddish brown and lilac, thickest and running together around the larger end; in form, oval.

FAMILY **MOTACILLIDÆ**. WAGTAILS.

"Bill slender, conical, nearly as high as wide at base, with slight notch at tip; the culmen slightly concave above the anterior extremity of the nostrils; short bristles at gape, which, however, do not extend forward to nostrils. Loral feathers soft and dense, but with bristly points; nasal groove filled with naked membrane, with the elongated nostrils in lower edge; the frontal feathers coming up to the aperture, but not directed forward nor overhanging it. Wings lengthened and sharp pointed; the primaries nine (without spurious first), of which the first three to five (considerably longer than the succeeding) form the tip; the exterior secondaries generally much emarginated at the ends; the inner secondaries (so-called tertials) nearly equal to the longest primaries. The tail rather narrow, emarginate. Tarsi lengthened, scutellate anteriorly only; the hind claw usually very long, acute, and but slightly curved (except in *Motacilla*). Inner toe cleft almost to the very base; quater adherent for basal joint only."

GENUS **ANTHUS** BECHSTEIN.

"Bill slender, much attenuated, and distinctly notched. A few short bristles at the base. Culmen concave at the base. Tarsi quite distinctly scutellate;

longer than the middle toe; inner lateral toe the longer. Hind toe rather shorter than the tarsus, but longer than the middle toe, owing to the long, attenuated and moderately curved hind claw, which is considerably more than half the total length of the toe. Tail rather long, emarginate. Wing very long; considerably longer than the lengthened tail, reaching to its middle. The first primary nearly equal to the longest. The tertials almost as long as the primaries."

SUBGENUS ANTHUS.

Tarsus longer than hind toe with claw. Inner web of outer tail feather chiefly dusky. Eggs pale olive, olive whitish, or pale chocolate brown, thickly freckled with brown (sometimes nearly uniform chocolate brown). (*Ridgway*.)

Anthus pensylvanicus (LATH.).

AMERICAN PIPIT.

PLATE XXXIII.

Migratory; common. Arrive early in April; a few remain until the first of May; the bulk return and leave in October; a few occasionally remain until late in November.

B. 165. R. 71. C. 89. G. 30, 304. U. 697.

HABITAT. The whole of North America; breeding from Labrador, and above timber line in the mountains of Colorado, north to the Arctic coast; winters from the Gulf States southward through Mexico to Guatemala.

SP. CHAR. Back, scapulars and top of head plain brownish gray or brownish, or with very indistinct darker streaks. *Adult, in summer:* Above, brownish gray or grayish brown, the feathers of top of head and back showing more or less distinct darker centers, most obvious on back; wings and tail dusky, with light brownish gray edgings, the middle and greater coverts tipped with the same; superciliary stripe and lower parts light cinnamon buff, paler on chin and throat, the chest (sometimes sides also) more or less streaked with dusky. *Winter plumage:* Above, decidedly more brown than in summer; beneath, much duller buffy (without any cinnamon tint), the streaks on breast usually broader. *Young:* Above, dull brownish gray; beneath, dull brownish white, the chest spotted or broadly streaked with blackish. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	6.70	10.90	3.45	2.70	.87	.49
Female ...	6.50	10.70	3.35	2.60	.87	.48

Iris dark brown; bill — upper dark brown, end of under brown, rest straw color; legs brown; feet dark brown, with bottoms greenish yellow; claws black.

With the habits and actions of these terrestrial birds away from their breeding grounds, I am very familiar, having met with them often upon both coasts as well as inland; but I do not think I can add anything of interest to the following from Doctor Brewer's description in "North American Land Birds:"

"At different seasons of the year the American Pipit is found throughout the continent, and abundant for the time in the several parts of the country, chiefly frequenting the least cultivated portions, and apparently preferring the sterile and least attractive regions. It is one of the most extensively distributed of all our North American birds, being found in immense numbers over the whole length and breadth of North America. Gambel met them in large numbers in New Mexico and California; Richardson found them on the plains of the Saskatchewan; it is abundant in the Arctic regions from May to October, and is equally common on the coast of Labrador; Mr. Dall found it universal from British Columbia north. It is also found in Florida, Cape St. Lucas, Mexico, and Central America. Accidental specimens have occurred in Europe.

"This Lark is a bird of easy and beautiful flight, passing and repassing through the air with graceful evolutions, and when moving to new localities, sweeping over the place several times before alighting. It also moves rapidly on the ground and after the manner of the true Larks, jerking the tail like our Water-Thrushes and the European Wagtails.

"When feeding on the open ground in the interior, their food is chiefly insects and small seeds. On the banks of rivers and on the seashore they are fond of running along the edge of the water, searching among the drift for insects, small shells and crustaceans."

In regard to its breeding habits Mr. Audubon says:

"I found it breeding very abundantly on the coast of Labrador, on the moss-covered rocks, as well as in the deep valleys, but never at any very great distance from the sea. The nests were usually placed at the foot of a wall of the rocks, buried in the dark mould, and beautifully formed of fine bent grass, arranged in a circular manner, without any hair or other lining. Both

birds incubate, sitting so closely that on several occasions I almost put my foot upon them before they flew. The first that I found was on the 29th of June, when the thermometer ranged from 51° to 54° . The eggs were six in number, five-eighths of an inch long, six and a quarter twelfths in breadth, being rather elongated, though rounded at both ends; their ground color, of a deep reddish chestnut or reddish brown, considerably darkened by numerous dots of a deeper reddish brown and lines of various sizes, especially toward the large end. . . .

“During the breeding time the male often rises on wing to the height of eight or ten yards, and emits a few clear and mellow notes, but returns to its consort or alights on the rock with a suddenness in keeping with the short duration of its song, which is rarely heard after the eggs are hatched.”

And Mr. Oliver Davie gives the following description of their nests and eggs:

“From four to six dark, chocolate colored eggs are laid, the surface of which is marked or overlaid with numerous specks and streaks of grayish brown. A set of five eggs in Mr. Norris’s cabinet were taken July 3, 1888, on Mount Audubon, Snowy Range, Rocky Mountains, Colorado, at an elevation of 11,000 feet. The nest was well concealed, being at the side of, and partly under, a large stone. It was composed wholly of grasses. The eggs are grayish white, but so thickly are they covered with specks of hair brown, that they appear to be almost of a uniform tint of brown. At the larger end these specks are heavier, producing the appearance of darker color. The five eggs measure, $.79 \times .58$, $.78 \times .58$, $.81 \times .58$, $.81 \times .58$, $.80 \times .55$, respectively. The average size is $.78 \times .58$.”

SUBGENUS *NEOCORYS* SCLATER.

“Bill half as long as head; the culmen concave at the base, slightly decurved at the tip. Rictus without bristles. Legs stout; tarsi distinctly scutellate, longer than the middle toe. Hind toe very long, equal to the tarsus, much longer than the middle toe; its claws but slightly curved, and about half the total length. Inner lateral toe rather longer than outer. Wings much longer than tarsi; first quill longest. Tertiaries considerably longer than secondaries. Tail rather short; emarginate.”

Anthus spragueii (AUD.).

SPRAGUE'S PIPIT.

PLATE XXXIII.

Migratory; rather rare in the eastern part of the State; quite common in the middle and western portions. I have a pair in "The Goss Ornithological Collection," which I shot October 20th, 1879, out of a small flock on the high prairie in Anderson county, and I have occasionally seen the birds at Neosho Falls, in both the spring and fall of the year, usually in small flocks, in company with the Horned Larks. Arrive early in April, and often remain in the western part of the State as late as the 20th of May, and in their northward flights occasionally sing as early as the 15th of the month. They begin to return early in October, a few remaining late into November. Doctor Watson thinks it an occasional summer resident.

B. 166. R. 73. C. 90. G. 31. 305. U. 700.

HABITAT. Interior plains of North America; east to western Manitoba (*Seton*), and eastern Kansas; breeding from central Dakota, Minnesota (?), northward to the Saskatchewan district; south in winter to southern Mexico.

SP. CHAR. *Adult, in summer:* Above, broadly streaked with pale grayish buff and dusky; wings dusky, with pale grayish-buffy edgings; two outer tail feathers chiefly white (the outermost sometimes entirely white); beneath, dull buffy white, more buffy across chest, where narrowly streaked with dusky; legs and feet very light colored. *Winter plumage:* Much more decidedly buffy, both above and below, with dark streaks on chest broader and less sharply defined. *Young:* Above, brownish buff, broadly streaked with black, the feathers of back and scapulars narrowly margined terminally with buffy or whitish; chin, throat and sides of neck whitish, the last, and also lower throat, streaked with dusky; rest of lower parts light buff, growing gradually paler posteriorly, the chest and sides of breast streaked with black. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.50	10.90	3.30	2.50	.88	.48
Female . . .	6.20	10.50	3.15	2.30	.88	.48

Iris dark brown; bill brown, with basal two-thirds of under straw color; legs, feet and claws flesh color.

These bleached birds of the plains are much more common throughout their range (except upon their breeding grounds) than they are generally reported to be. They usually associate to-

gether in small flocks, and often with the Horned Larks and Longspurs, and occasionally with the Savanna Sparrows. To the casual observer, all small, plain birds are "chippies," but as this species frequents the roadsides and bare spots upon the prairies, it is strange that they are so often overlooked, and so little known by the bird lovers. I can only account for it in this manner: The birds are shy and timid, and have the habit of squatting motionless at the sight of an intruder, and they so closely resemble their surroundings it is no easy matter to find them, even when "marked down." When in company with the Horned Larks and Longspurs, they drop to the ground before the latter (which attract attention by running about) become alarmed; then, as the birds of this class all, as of one accord, take wing together, and fly much alike, they escape notice.

They feed largely upon the seeds from weeds and grasses; also, insects in their season. In their search for the same, they run nimbly over the ground, and sweep over the same in circling, undulating flights, often abruptly rising and falling in their course, continually uttering, as they fly, a peculiar, lisping note.

I am unacquainted with their habits upon their breeding grounds, and therefore take pleasure in quoting from Dr. Coues' description, in "Birds of the Northwest:"

"But these common traits have nothing to do with the wonderful soaring action, and the inimitable, matchless song of the birds during the breeding season; it is no wonder Audubon grew enthusiastic in describing it. Rising from the nest or from its grassy bed, this plain looking little bird, clad in the simplest colors, and making but a speck in the boundless expanse, mounts straight up, on tremulous wings, till lost to view in the blue ether, and then sends back to earth a song of gladness that seems to come from the sky itself, to cheer the weary, give hope to the disheartened, and turn the most indifferent, for the moment, at least, from sordid thoughts. No other bird music in our land compares with the strains of this songster; there is something not of earth in the melody, coming from above, yet from no visible source. The notes are simply indescribable; but once heard they can never be forgotten. Their volume

and penetration are truly wonderful; they are neither loud nor strong, yet the whole air seems filled with the tender strains, and delightful melody continues long unbroken. The song is only heard for a brief period in the summer, ceasing when the inspiration of the love season is over, and it is only uttered when the birds are soaring.

“It is not a little singular that the Skylark (Sprague’s Pipit) should have so long continued to be rare in collections, since it is very abundant in the extensive region which it inhabits. In August, after all the broods are on wing, and through September, I have seen it in considerable flocks; and often, when riding along the prairie road, numbers would fly up on my approach, from the ruts ahead, where they were feeding, to settle again at a little distance farther on. These wheel tracks, where the grass was worn away, seemed to be their favorite resorts, where they could run with the greatest ease, and perhaps gather food less easily discovered in the thick grass. They tripped along the tracks with swift and dainty steps, never hopping, and continually vibrated the tail, just like our common Titlark (American Pipit). They are usually associated at such times with numbers of Chestnut-collared Longspurs, which seemed to fancy the same places, and with a few of Baird’s Sparrows. These were the only circumstances under which the Larks could be procured without the great quickness and dexterity required to take them on the wing, for the moment they alight in the grass of the prairie, be it scanty or only a few inches high, they are lost to view, their speckled gray colors blending completely with the herbage.

“On making a camp at Turtle Mountain, a pair of Larks rose from the spot where my tent was pitched, and circled about in such evident painful agitation, that I knew they had a nest somewhere near by. I watched them for a long while, but they would not re-alight to give me any clue to its whereabouts; and though I made careful search for the nest at intervals for several days, during which time I frequently saw the same pair, I was unsuccessful. No nests are harder to find than those of prairie birds, for there is nothing to guide one, and they are not often

discovered, except by accident, such as stumbling on one and scaring off the parent. But at length, a few days afterwards, in finally reviewing a particularly thorough search, a little bird just able to flutter a few feet was seen and caught, and in a few moments the rest of the family, sitting a few feet apart, were also secured—four in all. They had just left the nest, and yet I could not find it, though a perfectly bare depression of the ground, covered with droppings, just where the birds were, may have been their temporary resting place. My friend, Mr. Allen, was more fortunate on the Yellowstone expedition which he accompanied the same season, and he obligingly gives me the following account:

“ ‘The only nest we found was placed on the ground, and neatly formed of dry, fine grass. It was thinly arched over with the same material, and being built in a tuft of rank grass, was most thoroughly concealed. The bird would seem to be a close sitter, as in this case the female remained on the nest till I actually stepped over it, she brushing against my feet as she went off. The eggs were five in number, rather long and pointed, measuring about .90 x .60 inches, of a grayish white color, thickly and minutely flecked with darker, giving them a decidedly purplish tint.’ ”

FAMILY **TROGLODITYIDÆ**. WRENS, THRASHERS, ETC.

Tarsus longer than middle toe with claw, or else the bill elongated, not depressed, narrower at base than length of gonys; bill not hooked at tip; tail feathers normal; nasal feathers erect or inclined backward; bill linear, but often curved, the culmen always more or less so; first primary well developed, extending beyond tips of coverts. (*Ridgway*.)

SUBFAMILY **MIMINÆ**. THRASHERS.

Rictal bristles well developed; inner toe entirely free at base from middle toe; wing 3.50, or more. (*Ridgway*.)

GENUS **MIMUS** BOIE.

“Bill not much more than half the length of the head; gently decurved from the base, notched at tip; commissure curved. Gonys straight, or slightly concave. Rictal bristles quite well developed. Wings rather shorter than tail. First primary about equal to or rather more than half the second; third, fourth and fifth quills nearly equal, sixth scarcely shorter. Tail considerably gradu-

ated; the feathers stiff, rather narrow, especially the outer webs; lateral feathers about three-quarters of an inch the shorter in the type. Tarsi longer than middle toe and claw by rather less than an additional claw; tarsi conspicuously and strongly scutellate; broad plates seven."

Mimus polyglottos (LINN.).

MOCKINGBIRD.

PLATE XXXIV.

Summer resident; quite common. Arrive the middle of April to first of May; begin laying about the 20th of May. A hardy bird, that often remains until late in the fall.

B. 253, 253a. R. 11. C. 15. G. 7, 306. U. 703.

HABITAT. United States; north to Massachusetts, southern Iowa, southern Wyoming, etc.; rare north of latitude 40°; breeds throughout its range; resident from about latitude 36° southward into southern Mexico.

SP. CHAR. "Third and fourth quills longest; second about equal to eighth; the first half, or more than half, the second. Tail considerably graduated. Above, ashy brown, the feathers very obsoletely darker centrally and towards the light plumbeous downy basal portion (scarcely appreciable, except when the feathers are lifted). The under parts are white, with a faint brownish tinge (except on the chin), and with a shade of ash across the breast. There is a pale superciliary stripe, but the lores are dusky. The wings and tail are dark brown, nearly black, except the lesser wing coverts, which are like the back; the middle and greater tipped with white, forming two bands; the basal portion of the primaries white; most extended on the inner primaries. The outer tail feather is white, sometimes a little mottled; the second is mostly white, except on the outer web and toward the base; the third with a white spot on the end; the rest, except the middle, very slightly or not at all tipped with white. *Young:* Similar, but distinctly spotted with dusky on the breast, and obsoletely on the back."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.50	14.40	4.65	5.20	1.25	.70
Female . . .	9.50	14.00	4.50	4.80	1.20	.68

Iris light brown; bill black, with forks of under yellowish; legs, feet and claws black; the back of tarsi usually yellowish.

This unrivaled songster, so much praised as a cage bird, prefers for its haunts the scattering, shrubby trees upon the prairies or open lands, and shade trees about our dwellings; a familiar bird, that seeks rather than avoids the habitations of man. A great favorite, welcomed not only on account of its song but for its watchful care over its selected home, where it notes with a

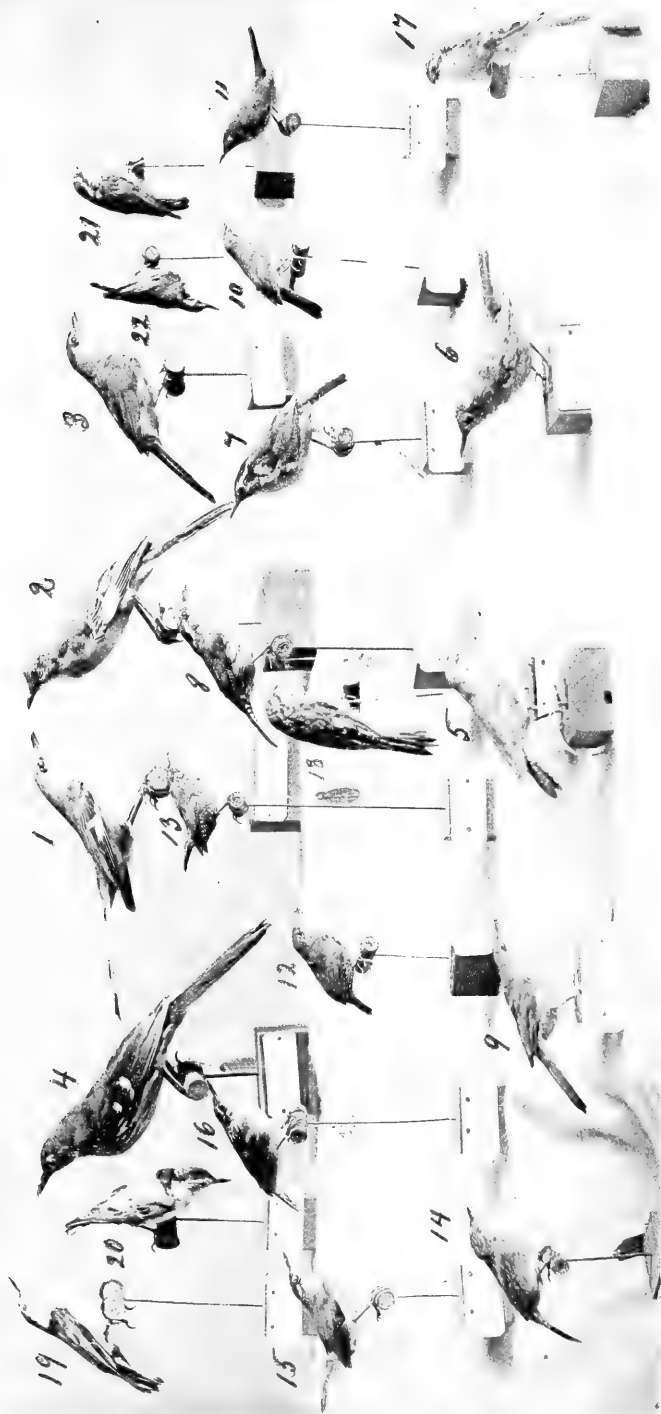


PLATE XXXIV.

1. MOCKINGBIRD; Male. 2. Female. 3. CATBIRD; Male. 4. BROWN THRASHER; Male. 5. ROCK WREN; Male. 6. CAROLINA WREN; Male. 7. Female. 8. BIRD'S WREN; Male. 9. WESTERN HOUSE WREN; Male. 10. JUNCO WREN; Male. 11. Female. 12. SHORT-BILLED MARSH WREN; Male. 13. LONG-BILLED MARSH WREN; Male. 14. Female. 15. WHITE-BREASTED NUTHATCH; Male. 16. Female. 17. BROWN CUPPER; Male. 18. Female. 19. Mockingbird; Male. 20. Female. 21. Red-breasted Nuthatch; Male. 22. Female.

keen eye the Hawk when but a speck in the sky, the snake that ventures to crawl from its hiding place, or any of its prowling enemies, giving the alarm at their near approach (a warning heeded by the poultry as well as by its mate), and boldly attacks and drives them away.

The mated pairs are strongly attached to each other, and are unremitting in their attentions and care for their young. They subsist largely upon the various kinds of earth worms and insect life, and berries in their season. They are very fond of the latter (grapes and raspberries the favorites), but the good they do greatly overbalances the harm. Their flight is low, slightly undulating, and not very well sustained.

Their song, rich in melody and power, has no equal, save in that of the Nightingale; and it is said by good judges, that have heard them both, that its native or natural song is far superior in compass and thrilling bursts of melody, and, were it not for its sudden breaks as an imitator, mimicking in the midst of his song the garrulous notes of the Jay, the quack of a Duck, or the soft notes of our little songsters, regardless of harmony, they would stand unrivaled. Perched upon a tall dead limb, or the housetop, he pours forth his song, not only throughout the day but on bright moonlight nights, and at times is so inflated with love and vigor that he rises as he sings, and drops back to his perch, with tremulous wings and spreading tail, a proud bird! a picture of happiness and content.

Their nests are placed in small trees, thickets, bushes, hedges, and in various locations, but rarely over ten feet from the ground. The outside is loosely constructed of small twigs, weeds, etc., and lined usually with fine rootlets, sometimes with hairs or other suitable material at hand. Eggs four or five, .98x.74; light greenish blue to a dull buffy color, spotted and blotched with yellowish to very dark reddish brown and purple, thickest about the larger end; in form, oval.

GENUS **GALEOSOPTES** CABANIS.

"Bill shorter than the head, rather broad at base. Rictal bristles moderately developed, reaching to the nostrils. Wings a little shorter than the tail, rounded, secondaries well developed; fourth and fifth quills longest; third and

sixth little shorter; first and ninth about equal, and about the length of secondaries; first quill more than half the second, and about half the third. Tail graduated; lateral feather about .70 shorter than the middle. Tarsi longer than middle toe and claw by about an additional half claw; scutellate anteriorly, more or less distinctly in different specimens; scutella about seven. The conspicuous naked membranous border round the eye of some Thrushes, with bare space behind it, not appreciable."

Galeoscoptes carolinensis (LINN.).

CATBIRD.

PLATE XXXIV.

Summer resident; abundant in the eastern part of the State; not uncommon in the western portion. Begin laying about the middle of May; the bulk leave about the last of September; a few remaining late in November.

B. 254. R. 12. C. 16. G. 8, 307. U. 704.

HABITAT. Eastern North America; north in the interior to about latitude 54°; west to the western base of the Rocky Mountains; breeding throughout its United States range and northward; wintering from the Indian Territory and the Carolinas southward, through eastern Mexico, to southern Central America.

SP. CHAR. *Adult:* Uniform plumbeous slate, paler beneath; top of head and tail black; lower tail coverts chestnut; bill and feet black; iris brown. *Young:* Similar to the adult, but black cap fainter and less sharply defined; lower parts very faintly mottled transversely with darker, and lower tail coverts dull light rusty. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.80	11.50	3.65	3.80	1.10	.70
Female	8.25	11.00	3.45	3.50	1.05	.68

Iris dark brown; bill, legs, feet and claws black; legs and feet sometimes brownish black.

Miss Florence A. Merriam, in "Birds through an Opera Glass," describes the habits and actions of this eccentric and well-known bird, in so life-like and happy a manner, that I take pleasure in copying the same:

"High trees have an unsocial aspect, and so, as Lowell says, 'The Catbird croons in the lilac bush,' in the alders, in a prickly ash copse, a barberry bush, or by the side of the garden. In Northampton, one of his favorite haunts is an old orchard, that slopes down to the edge of Mill River. Here, he is welcomed

every year by his college girl friends; and in the open seclusion of an apple tree, proceeds to build his nest, and raise his little family, singing through it all with keen enjoyment of the warm sunshine and its own company.

“To the trio the Catbird is at once the most interesting and most exasperating of birds. Like some people, he seems to give up his time to the pleasure of hearing himself talk. A first cousin of the Mockingbird — whom he resembles in person much more than in voice — perhaps the relationship accounts for his overweening confidence in his vocal powers. As a matter of fact his jerky utterance is so harsh that it has been aptly termed asthmatic.

“The Catbird is unmistakably a Bohemian. He is exquisitely formed, and has a beautiful slate gray coat, set off by his black head and tail. By nature he is peculiarly graceful, and, when he chooses, can pass for the most polished of the Philistine aristocracy. But he cares nothing for all this. With lazy self-indulgence, he sits by the hour with relaxed muscles, and listless, drooping wings and tail. If he were a man, you feel confident that he would sit in shirt sleeves at home and go on the street without a collar.

“And his occupation? His cousin is an artist, but he — is he a wag as well as a caricaturist, or is he in sober earnest when he tries to mimic the inimitable Wilson’s Thrush? If a wag, he is a success, for he deceives the unguarded into believing him a Robin, a cat, and ‘a bird new to science.’ How he must chuckle over the enthusiasm which hails his various notes, and the bewilderment and chagrin that come to the diligent observer who finally catches a glimpse of the garrulous mimic!

“The Catbird builds his nest as he does everything else. The loose mass of coarse twigs, patched up with leaves, pieces of newspaper, or anything he happens to fancy, looks as if it would hardly bear his weight. He lines it, however, with fine bits of brown and black roots, and when the beautiful dark bluish green eggs are laid in it, you feel sure that such an artist-looking bird must enjoy the contrasting colors.”

Eggs three to five, usually four, .94 x .69; in form, oval.

GENUS **HARPORHYNCHUS** CABANIS.

"Bill from forehead as long as, or much longer than, the head, becoming more and more decurved in both jaws as lengthened. No indication of a notch. Rictus with the bristles extending beyond the nostrils. Tarsus long and stout, appreciably exceeding the middle toe and claw, strongly scutellate anteriorly. Wings considerably shorter than tail, much rounded; the first quill more than half the second; fourth or fifth longest. Tail large, much graduated; the feathers firm."

SUBGENUS **METHRIOPTERUS** REICHENBACH.

Tarsus longer than exposed culmen; gonyx much shorter than middle toe without claw. Tail exceeding wing by not more than length of tarsus. Lower parts more or less distinctly spotted or streaked (these markings sometimes obsolete in *H. bendirei* and *H. palmeri*). (*Ridgway*.)

Harporhynchus rufus (LINN.).**BROWN THRASHER.**

PLATE XXXIV.

Summer resident; abundant in the eastern part of the State; not uncommon in the western portion. Arrive the last of March to middle of April; begin laying early in May. The bulk leave in September and October, a few remaining until late in the fall.

B. 261, 261a. R. 13. C. 17. G. 9, 308. U. 705.

HABITAT. Eastern United States; north to southern Maine, Ontario and Manitoba; west to the Rocky Mountains; south through the Gulf States (replaced in western Texas by *H. longirostris*). Breeds throughout its range. Winters from the Gulf coast north into the Indian Territory and eastward, to about latitude 37°.

SP. CHAR. "Exposed portion of the bill shorter than the head. Outline of lower mandible straight. Above, light cinnamon red; beneath, pale rufous white, with longitudinal streaks of dark brown, excepting on chin, throat, middle of the belly and under tail coverts. These spots anteriorly are reddish brown in their terminal portion. The inner surface of the wing and the inner edges of the primaries are cinnamon; the concealed portion of the quills otherwise is dark brown. The median and greater wing coverts become blackish brown towards the end, followed by white, producing two conspicuous bands. The tail feathers are all rufous, the external ones obscurely tipped with whitish; the shafts of the same color with the veins."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	11.50	13.75	4.25	5.40	1.35	1.05
Female	10.70	13.35	4.10	4.65	1.30	1.00

Iris yellow; bill black, with under whitish at base; legs and feet grayish brown; tarsi in front reddish brown; claws light brown.

These large, handsome songsters prefer for their haunts the underbrush bordering the woodlands, tangled thickets of bushes and briers, and the hedges upon the prairies, and, while not shy or timid birds, as a rule select their homes rather remote from our dwellings. The male arrives in advance, and, as soon as he has selected a breeding place, mounts the topmost branches of the trees and pours forth his loudest song at short intervals, fearing if he remains silent the hen bird may pass him by unnoticed. Upon her arrival, he sings from the lower branches and bushes beneath, and devotes a large share of his time to love making, driving away intruders, and in assisting in nest building. As soon as the nest is completed and his mate begins to lay, he again sings from the treetops to cheer her, taking his turn, however, in sitting upon the eggs; but as soon as the little ones are hatched his song ceases almost entirely, and he probably devotes his time to watching over and assisting in caring for the wants of the young.

They feed and rear their young upon earth worms, spiders, grasshoppers, beetles, wasps, etc., and berries in their season. They are quite rasorial in their habits, and in their search for food often hop over the ground and scratch among the leaves. They have a peculiar habit of beating the insects upon the ground or perch, knocking and thrashing them about until dead (and in removing the wings and legs of the larger ones before swallowing them). It is for this reason they are called Thrashers. They flit and hop about in the bushes, with expanded tails, in a graceful, easy manner, but, on account of the shortness of their rounded wings, their flights are low and heavy. The old birds do not take kindly to confinement, but the young when reared from the nest become very tame, and when well cared for sing with full power and melody their charming wild-wood song, which, for length, compass, variety and musical flow, ranks next to the song of the Mockingbird. Their call and alarm notes vary: a "Chup," hissing sounds, at times harsh, scolding notes.

Their nests are placed in low bushes, vines, hedges, and occasionally upon the ground; a coarse, bulky structure, the outside usually composed of sticks, rootlets and stems of weeds; within this an inner nest of leaves and strippings from plants, lined with fine rootlets and horse hair. Eggs three to five (usually four), 1.06x.80; creamy white to pale greenish, thickly dotted with yellowish to reddish brown, confluent around the larger end; in form, oval to rounded oval.

SUBFAMILY TROGLODYTINÆ. WRENS.

"Rictal bristles wanting; the loreal feathers with bristly points; the frontal feathers generally not reaching to nostrils. Nostrils varied, exposed or not covered by feathers, and generally overhung by a scale-like membrane. Bill usually without notch (except in some middle American genera). Wings much rounded, about equal to tail, which is graduated. Primaries ten, the first generally about half the second. Basal joint of middle toe usually united to half the basal joint of inner, and the whole of that of the outer, or more. Lateral toes about equal, or the outer a little the longer. Tarsi scutellate."

GENUS *SALPINCTES* CABANIS.

"Bill as long as head; all the outlines nearly straight to the tip, then decurved; nostrils oval. Feet weak; tarsi decidedly longer than the middle toe; outer lateral toe much longer, reaching to the base of the middle claw, and equal to the hinder. Wings about one-fifth longer than the tail; the exposed portion of the first primary about half that of the second, and two-fifths that of the fourth and fifth. Tail feathers very broad, plain, nearly even or slightly rounded; the lateral moderately graduated."

Salpinctes obsoletus (SAY).

ROCK WREN.

PLATE XXXIV.

Summer resident in the middle and western part of the State; common in suitable localities. Arrive early in April; begin laying the first of May; leave in the months of September and October.

B. 264. R. 58. C. 65. G. 22, 309. U. 715.

HABITAT. The arid regions of the western United States; north occasionally into British Columbia; east into western Iowa, middle Kansas and Texas; southward through Mexico to Guatemala and the Gulf of Fonseca; breeds largely throughout its range.

SP. CHAR. "Plumage very soft and lax. Bill about as long as the head. Upper parts brownish gray, each feather with a central line and (except on the head) transverse bars of dusky, and a small dark brownish spot at the end (seen also on the tips of the secondaries). Rump, sides of the body, and posterior part of the belly and under tail coverts, dull cinnamon, darker above. Rest of under parts dirty white; feathers of throat and breast with dusky central streaks. Lower tail coverts banded broadly with black. Inner tail feathers like the back, the others with a broad black bar near the end; the tips cinnamon; the outer on each side alternately banded with this color and black. A dull white line above and behind the eye. Young not marked or banded beneath."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.00	9.35	2.80	2.25	.80	.70
Female . . .	5.60	8.60	2.50	2.00	.78	.65

Iris brown; bill dusky, under pale at base; legs, feet and claws blackish.

The natural home of this bleached species is within the cañons and on the rocky hillsides of the sterile plains, or bare spots and rocky cliffs of the fertile regions. In their selection of a home, they do not appear to seek or shun the presence of man, for I have found them in wild, barren regions, and about the adobe houses in the Mexican villages and the log cabins northward. They are the most abundant in the desolate, rocky places, because such localities are better adapted to their mode of life, rather than for a love of seclusion, as is generally supposed. During the breeding season they are very shy and ever upon the alert, but at other times less regardless of an intruder. Restless, active birds, hopping and fluttering from place to place, creeping into the fissures in the rocks, chinks in the adobe buildings, etc., in search of insects; scarcely still for a moment, for when standing, they tilt their bodies and jerk and spread their tails in a nervous, fidgety manner.

The male, perched upon a rock or elevated position, pours forth, with head thrown back and inflated throat, his loud, rapid, whirring, musical song, so pleasing to the ear—especially in their wild, secluded retreats, as the sound breaks the silence and rings and echoes in the cañons. Their ordinary notes are rather harsh and varied.

Their nests are placed in various situations—chinks in log cabins, holes in adobe buildings, but usually on the ground,

under flat rocks, or in crevices in rocky ledges. Eggs four to nine, .76 x .60; crystal white, sparingly speckled with reddish brown, chiefly aggregating at and forming a wreath around the larger end; in form, oval.

GENUS **THRYOTHORUS** VIEILLOT.

"Bill compressed, rather slender; height about one-fourth the length above. Culmen and commissure gently curved throughout; gonys straight; tip very obsoletely notched. Nostrils in the lower edge of anterior extremity of the nasal groove, narrowly elliptical, overhung by a stiff, scale-like roof of the thickened membrane of the upper part of the nasal groove, the crescentic edge rounded; the septum of nostrils imperforate; the posterior part of the nasal cavity with a short septum projecting into it parallel with the central, not perpendicular, as in *Microcerculus*. Wings and tail about equal, the latter moderately rounded; the first primary more than half the second, about half the longest. Tarsi rather short, scarcely exceeding middle toe; anterior scutella distinct, rest of each side of tarsi in a continuous plane. Lateral toes equal."

SUBGENUS **THRYOTHORUS**.

Feathers of rump with very distinct, concealed white spots; tail feathers rusty brownish, narrowly barred for entire length with dusky and lighter rusty. (*Ridgway*.)

Thryothorus ludovicianus (LATH.).

CAROLINA WREN.

PLATE XXXIV.

Resident; abundant in the eastern part of the State; rare in the western portion. Begin laying early in April.

B. 265. R. 60. C. 68. G. 23. 310. U. 718.

HABITAT. Eastern United States, except southern Florida (where it is replaced by *T. ludovicianus miamensis*); north to southern New England and southern Nebraska; west to the Great Plains; south into northeastern Mexico; breeds throughout its range, and a resident, except in its extreme northern limits.

SP. CHAR. "Exposed portion of the bill shorter than the head. Above, reddish brown, most vivid on the rump. A whitish streak over the eye, bordered above with dark brown. Throat whitish; rest of under parts pale yellow rusty, darkest toward the under tail coverts, which are conspicuously barred with black. Exposed surface of the wings and tail (including the upper coverts) barred throughout with brown, the outer edges of tail feathers and quills showing series of alternating whitish and dusky spots."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.70	7.80	2.40	2.20	.80	.65
Female . . .	5.30	7.40	2.25	2.00	.78	.60

Iris hazel; bill—upper bluish black, under pale or dull whitish; legs flesh color; feet light brown; claws brown.

These birds are quite common throughout their range. They are occasionally found in the groves and shrubbery around our prairie homes, and throughout the woodlands, but their favorite resorts are within the deep woods bordering the streams, upon the bottom lands, where the undergrowth is thick, or about old logs, fallen trees and brush heaps. Active, wild, timid birds, ever upon the lookout, and ready at the first alarm to dive into a hiding place, but too restless to remain concealed; scarcely ever at rest, hopping about the low branches, creeping over the limbs, the sides of slightly leaning trees, decaying logs, and into every hollow, nook or cavity, in search of the insect life upon which they feed; uttering at short intervals a sort of self-satisfied twitter, their usual call note, "Chirr-chirr," at times in a loud scolding manner.

The males begin to sing early in February, and are occasionally heard in autumn. The woods ring with their loud and often prolonged whistling, musical, "Willu-way! willu-way! willu-way!" They have other odd and varied notes, all uttered in an expressive, energetic manner. Mr. Nuttall and several other writers say that these birds mimic others; they may do so, but I have known them for years, and never heard them utter any sounds outside of their own varied notes.

Their flights are short, direct, and near the ground, and are sustained by rapid fluttering of their short, rounded wings. The parents are very attentive to their young, guarding and rearing them with the greatest care.

Their nests are placed in cavities in old logs, rocks and out-buildings. They are loosely constructed of bits of twigs, grasses, leaves, etc., and lined with hair and a few feathers. They are quite bulky, usually filling the space, but, when it is too high to fill, partially roof the nest over, entering a hole left at the side. Eggs three to seven (usually four to five), .75 x .58; white to pale, creamy, pinkish white, spotted rather evenly over the surface with reddish brown and lilac, but sometimes thickest and forming confluent band around larger end; in form, rounded oval.

SUBGENUS THRYOMANES SCLATER.

Tall feathers (excepting middle pair) chiefly plain blackish, the outer feathers spotted and barred at tip with light grayish and dull whitish; middle pair of tail feathers grayish brown or brownish gray, barred or transversely spotted with black or dusky. (*Ridgway.*)

Thryothorus bewickii (AUD.).

BEWICK'S WREN.

Summer resident; very rare. Arrive about the first of April; begin laying early in May; leave about the last of October.

B. 267. R. 61. C. 71. G. 24, 311. U. 719.

HABITAT. Eastern United States; north to New Jersey and Minnesota; west to the edge of the Great Plains and eastern Texas; breeding throughout its range; winters in the Southern States.

SP. CHAR. "Above, dark rufous brown; rump and middle tail feathers sometimes a little paler, and very slightly tinged with gray, and (together with the exposed surface of secondaries) distinctly barred with dusky. Beneath, soiled plumbeous whitish; flanks brown; crissum banded; ground color of quills and tail feathers brownish black."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.40	7.15	2.25	2.35	.70	.53
Female . . .	5.10	6.90	2.10	2.15	.68	.52

Iris brown; bill black, with under pale bluish at base; legs, feet and claws dark brown.

These familiar birds are of rare occurrence in their extreme western range, but very common east of the Mississippi River to the Alleghanies; rare and local eastward. They frequent the thickets and clumps of bushes on the prairies, fields and hill-sides, but in the settled portions of the country prefer for their homes the shrubbery about the dwelling houses and outbuildings. Mr. Ridgway, in "Birds of Illinois," happily says:

"No bird more deserves the protection of man than Bewick's Wren. He does not need man's encouragement, for he comes of his own accord and installs himself as a member of the community wherever it suits his taste. He is found about the cow shed and barn along with the Pewee and Barn Swallow; he investigates the pig sty, then explores the garden fence, and finally mounts to the roof and pours forth one of the sweetest songs

that ever was heard. Not a voluble gabble, like the House Wren's merry roundelay, but a fine, clear, bold song, uttered as the singer sits with head thrown back and long tail pendent—a song which may be heard a quarter of a mile or more, and in comparison with which the faint chant of the Song Sparrow sinks into insignificance. The ordinary note is a low, soft 'Plit,' (occasionally a rather harsh, scolding note,) uttered as the bird hops about, its long tail carried erect or even leaning forward, and jerked to one side at short intervals. In its movements it is altogether more deliberate than either *T. ludovicianus* or *T. aedon*, but nothing can excel it in quickness when it is pursued."

Their nests are built in deserted Woodpecker holes, hollow logs, nooks in buildings, or any cavity they may fancy. They are loosely constructed of sticks, rootlets, stems, spiders' webs, grasses, etc., and lined with fur, or most any soft substance, and a few downy feathers; quite bulky, usually filling the space, but I think in no case roofed over. Eggs usually seven to nine—as high as eleven have been taken—.66 x .50; white, speckled with light and dark shades of reddish brown and purple shell stains, thickest around the larger end; in form, oval.

Thryothorus bewickii bairdi (SALV. & GODM.).

BAIRD'S WREN.

PLATE XXXIV.

Resident in southern Kansas; common in the middle and southwestern portion. Begin laying early in May.

B. —. R. 61b. C. 72. G. —, 312. U. 719b.

HABITAT. From middle Kansas, Colorado and Utah south, through western Texas, New Mexico and Arizona, into Mexico. Breeds throughout its range.

SP. CHAR. "Above, ashy brown; rump and middle tail feathers brownish ash, the former nearly pure ash; without appreciable bars; bars on secondaries obsolete. Beneath, including inside of wing, pure white, with little or no brownish on the sides. Crissum banded; ground color of the quills and tail feathers grayish brown."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.60	7.50	2.30	2.50	.70	.55
Female	5.20	7.15	2.15	2.30	.68	.53

Iris brown; bill black, with under pale blue at base; legs, feet and claws dark brown.

This bleached race of the plains is similar in habits and actions to Bewick's Wren, and its song, call notes, manner of nesting and eggs are not noticeably different. A set of five eggs, taken at Corpus Christi, Texas, May 9th, 1882, are, in dimensions: .62 x .49, .63 x .49, .63 x .50, .63 x .50, .63 x .50.

GENUS **TROGLODYTES** VIEILLLOT.

"Bill only gently curved at the tip. Outstretched feet, reaching nearly to or beyond the end of the tail. Back without streaks. No distinct superciliary stripe."

SUBGENUS **TROGLODYTES**.

Tail more than three-fourths as long as wing. (*Ridgway*.)

Troglodytes aedon aztecus BAIRD.

WESTERN HOUSE WREN.

PLATE XXXIV.

Summer resident; common. Arrive in April; begin laying about the middle of May. Leave in September.

B. 271. R. 63*a*. C. 75. G. 26, 313. U. 721*b*.

HABITAT. Western United States, except Pacific coast; east to Illinois; south into Mexico to Vera Cruz; breeds throughout its United States range, and probably southward.

This variety of *T. aedon* was entered in my "Catalogues of the Birds of Kansas" as *T. aedon parkmanii*, as at that time its habitat was supposed to embrace the western United States east to or near the Mississippi River. Since then, the A. O. U. Committee, in reviewing the material before them, have decided that the birds on the Pacific coast differ enough in color, etc., to form another subspecies, and, as the name *T. parkmanii* was given by Audubon to a bird procured on the Columbia River, the new form properly retains the name, and our bird becomes *T. aedon aztecus*.

SP. CHAR. of *T. aedon*. "Tail and wings about equal. Bill shorter than head. Above, reddish brown, darker towards the head, brighter on the rump. The feathers everywhere, except on the head and neck, barred with dusky; obscurely so on the back, and still less on the rump. All the tail feathers barred from the base; the contrast more vivid on the exterior one. Beneath, pale ful-

vous white, tinged with light brownish across the breast; the posterior parts rather dark brown, obscurely banded. Under tail coverts whitish, with dusky bars. An indistinct line over the eye, eyelids and loreal region whitish. Cheeks brown, streaked with whitish."

This subspecies differs from the above description, in being somewhat paler and grayer, with less rufous on rump and tail, more noticeable upon the plains (as would naturally be expected), but it shades so gradually back into the color of the eastern bird the dividing line cannot well be determined.

With all deference to the committee, it is my opinion that the differences are too inconstant to warrant the separation of either form, and that *T. aedon* should be the recognized bird from coast to coast.

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.00	6.75	2.15	2.05	.67	.51
Female	4.70	6.40	2.00	1.90	.65	.49

Iris brown; bill—upper dusky, under pale; legs and feet brown; claws dark brown.

These interesting, familiar little birds are very common, or rather locally so, throughout their range—abundant in some localities, and, perhaps in the near vicinity, rare, or not to be found. They frequent the open, shrubby hills and mountain sides, and scanty growths bordering the streams upon the plains and unsettled portions of the country; but, within the settlements, prefer for their haunts the orchards, gardens or shrubbery about the dwelling houses and outbuildings. Pugnacious little fellows, that boldly attack the larger birds, and, by scolding and harassing, drive the house cat and other prowling enemies away; and, regardless of property rights, take possession of the Bluebird and Martin houses, and are often able to retain possession.

They are industrious insect hunters, searching in the bushes, vines, woodpile, etc., and creeping and peeping into every nook and cranny for the same. They move about with tail erect, in a quick, nervous manner.

Their song, heard almost incessantly during the early breeding season, is poured forth from a perch, in a vigorous manner, with swollen throat, head thrown back, depressed tail and tremulous wings, a picture of happiness and content. A sprightly,

pleasing, warbling, flippant and voluble song, but, to my ear, not remarkably musical. Outside from their song and interesting ways, they are valuable in the destruction of injurious insect life, and are in no way harmful; and, for these reasons, suitable boxes are or should be placed in the porches, and nailed to the outbuildings, for their reception.

Their nests are placed in holes in trees, logs and stumps, and about dwelling houses, in boxes, etc., entering outhouses through crevices and knotholes—in fact, most anywhere (I once found a nest in the skull of a buffalo); loosely constructed of sticks, weeds, etc., filling the cavities, leaving a small opening for entrance; within the rubbish they construct an inner nest, composed of finer material, lining the same with feathers, fur, and most any soft, warm substance. Eggs seven to nine, .64x.49; ground color white to pinkish white, but so thickly dotted with specks of reddish brown and a few purple markings that the white is concealed; in form, oval.

SUBGENUS ANORTHURA RENNIE.

Tail less than three-fourths as long as wing. Nest of moss, etc., lined with soft feathers, built in crevices of dead logs or stumps, in thick, coniferous woods. Eggs five to seven; white or creamy white, finely but rather sparingly speckled with reddish brown; sometimes nearly immaculate. (*Ridgway.*)

Troglodytes hiemalis VIEILL.

WINTER WREN.

PLATE XXXIV.

Winter sojourner; rather rare. Leave in March; begin to return in October.

B. 273. R. 65. C. 76. G. 27, 314. U. 722.

HABITAT. Eastern North America; west to the Rocky Mountains; breeding from the northern United States northward; wintering from about its southern breeding limits southward to or near the Gulf coast.

SP. CHAR. Above, deep brown, duller anteriorly, brighter (a burnt umber tint) on rump and upper tail coverts, the wings and tail (often rump and back also) narrowly barred with dusky; outer webs of quills spotted with dusky and pale brownish or brownish white; superciliary stripe and lower parts pale Isabella brownish, varying to dull light tawny, the belly, flanks and under tail coverts distinctly barred with blackish and whitish. Chin, throat, chest and breast

pale dull Isabella color, sometimes inclining to dull brownish white anteriorly; upper parts more rusty brown. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	3.90	6.05	1.80	1.25	.70	.43
Female . . .	3.75	5.80	1.70	1.15	.68	.40

Iris dark brown; bill dusky, with under pale at base; legs, feet and claws light brown.

These chubby little birds are to be looked for in the deep woods, among the upturned roots of fallen trees, old moss covered logs and decaying debris. Active, pert little fellows, that with tails more than erect flit from place to place, and in their search for insect life, peep into the crevices in the bark, and under the fallen leaves, and (like mice) creep into cavities, hollow logs and every conceivable dark, secluded nook, uttering now and then their "Chirr" note. They never mount into the treetops, and seldom above the low bushes, keeping, as a rule, on or near the ground.

In the summer of 1880, I found the birds quite common in the thick growths of stunted spruce trees and tangled bushes on Byron Isle, one of the Magdalen group, in the Gulf of St. Lawrence; and there had the pleasure of listening to their rich, voluble song, which far surpasses any of the family in power and melody. It rang out so clear and resonant I could not believe it came from the throat of so small a bird, until I at last caught sight of one singing from a fallen tree. I say at last, for it was a long, long time before I could catch more than a passing glimpse, as they slyly flitted around me in their almost impenetrable, secluded retreats. I also searched for their nests but failed to find one, but just before I left the island, saw several young birds nearly full grown. Doctor Brewer, in "North American Land Birds," gives the following description of their nests and eggs:

"Mr. Audubon met with its nest in a thick forest in Pennsylvania. He followed a pair of these birds until they disappeared in the hollow of a protuberance covered with moss and lichens, resembling the excrescences often seen on forest trees. The aperture was perfectly rounded and quite smooth. He put

his finger in and felt the pecking of the bird's bill and heard its querulous cry. He was obliged to remove the parent bird in order to see the eggs, which were six in number. The parent birds made a great clamor as he was examining them. The nest was seven inches in length and four and a half in breadth. Its walls were composed of mosses and lichens, and were nearly two inches in thickness. The cavity was very warmly lined with the fur of the American hare and a few soft feathers. Another nest, found on the Mohawk, in New York, was similar, but smaller, and built against the side of a rock near its bottom.

"Mr. William F. Hall met with the nest and eggs of this bird at Camp Sebois, in the central eastern portion of Maine. It was built in an unoccupied log hut, among the fir leaves and mosses in a crevice between the logs. It was large and bulky, composed externally of mosses, and lined with the fur of the hedge hogs and the feathers of the Spruce Partridge and other birds. It was in the shape of a pouch, and the entrance was neatly framed with fine pine sticks. The eggs were six in number, and somewhat resembled those of the *Parus atricapillus*. The female was seen and fully identified.

"In this nest, which measured five and three-quarters inches by five in breadth, the size, solidity and strength, in view of the diminutive proportions of its tiny architect, are quite remarkable. The walls are two inches in thickness and very strongly impacted and woven. The cavity was an inch and a quarter wide and four inches deep. Its hemlock framework had been made of green materials, and their strong and agreeable odor pervaded the structure. The eggs measured .65x.48 of an inch, and were spotted with a bright reddish brown and a few pale markings of purplish slate, on a pure white ground. Compared with the eggs of the European Wren, their eggs are larger, less oval in shape, and the spots much more marked in their character and distinctness."

GENUS **CISTOTHORUS** CABANIS.

"Bill about as long as the head, or much shorter, much compressed, not notched, gently decurved from the middle; the gonys slightly concave or straight. Toes reaching to the end of the tail; tarsus longer than middle toe; hind toe

longer than the lateral, shorter than the middle; lateral toes about equal; hind toe longer than or equal to its digit. Wings rather longer than tail, all the feathers of which are much graduated; the lateral only two-thirds the middle. The feathers narrow. Back black, conspicuously streaked with white."

SUBGENUS CISTOTHORUS.

"Bill short, stout; its depth equal to one-half its length from the nostril; gonys straight, or even convex, ascending. Crown streaked; no distinct superciliary stripe."

Cistothorus stellaris (LICHT.).

SHORT-BILLED MARSH WREN.

PLATE XXXIV.

Summer resident; rare. Arrive the last of April to first of May; begin laying the last of May to first of June; leave for the south the last of October to middle of November.

B. 269. R. 68. C. 81. G. 29, 315. U. 724.

HABITAT. Eastern United States and more southern British possessions; west to the Great Plains. Breeds occasionally throughout its range, but chiefly north of latitude 41°. Winters in Gulf States, and probably a little southward.

SP. CHAR. "Bill very short, scarcely half the length of the head. Wing and tail about equal. Hinder part of the crown, and the scapular and interscapular region of the back and rump, almost black, streaked with white. Tail dusky, the feathers barred throughout with brown (the color grayish on the under surface). Beneath, white; the sides, upper parts of breast and under tail coverts reddish brown. Upper parts, with the exception mentioned, reddish brown. The flanks and under tail coverts are sometimes of a dull buffy ochraceous hue."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.50	5.80	1.85	1.70	.62	.40
Female ...	4.25	5.50	1.70	1.60	.62	.38

Iris dark brown; bill — upper dusky, under pale at base; legs, feet and claws brown; bottoms of feet dull yellowish.

I am very familiar with the habits of this species, especially upon their breeding grounds in Wisconsin; but feel that I can not add anything of interest to the following pleasing and accurate description, taken from Mr. Nehrling's interestingly written work on "North American Birds," (now being published in parts):

"The Short-billed Marsh Wren is found in great numbers in some localities in Wisconsin and Illinois, and thence eastward to

the Atlantic coast. Westward, it ranges to the Great Plains, and north to Manitoba, wintering in great numbers in the Gulf States and southward. In the Koshkonong and Horicon marshes, and on the swampy borders of the Menominee and Rock Rivers, in Wisconsin, this Wren is very common; but, as it is a shy bird, and difficult to approach, comparatively few persons are acquainted with it. It always loves to take up its abode in the seclusion of the swamps and marshes, where it is found usually in pairs, and not in colonies, like the long-billed species. In marsh places, partly covered with a growth of scrubby willows, in swamps, where the beautiful Red-winged Blackbird and Gallinules are its neighbors, and in low, grassy meadows, adorned with gorgeous Canada and meadow lilies, where the tinkling, mellow strains of the Bobolink float down from above, I have met with this nimble little Wren frequently. Here, also, in the balmy month of June, its song—if song it can be called—may be heard. The notes are very lively, and quaint, consisting of a number of soft and melodious sounds, blended frequently with harsh, wiry tones. Being very assiduous, the little songster makes up in quantity of song what it lacks in quality. But could we expect anything different from a bird which inhabits localities where the bullfrog incessantly sends forth its discordant croaks throughout the entire spring-time; where the cricket's croon is the farewell of summer, as the trill of the toad is the prelude to spring? The strain is very similar to that of the Long-billed species, but not so loud, and more varied. Both birds are very diligent songsters, delivering their melodies usually from the top of a tuft of reeds, or bull-rushes. When the bird is approached too near, the song closes with a harsh and scolding utterance; then the singer glides down in the tangled masses of reeds, where it disappears with celerity, and considerable exertion is required to drive him from the dense vegetation.

“Evidently our bird is far more numerous than is generally supposed, but its living in secluded localities and its modest color causes it to be overlooked by most people. Only the true friend of nature, who is accustomed to ramble about through

forest and meadow, through marshes and swamps, knows where to find it. I observed this Wren during the entire year in marshy places near the Gulf coast of Texas, and Mr. Maynard found it all along the eastern side of Indian River, Fla., especially in savannas covered with short grass, which grows so thickly that it becomes matted together.

“The nest is always placed in a tussock of reeds or coarse grass, the tops of which are ingeniously interwoven into a coarse and strong covering, spherical in shape and closed on every side, except one small aperture left for an entrance. The strong, wiry grass of the tussock is also interwoven with finer materials, making the whole impervious to the weather.’ This globe-like structure is lined with finer grasses, and sometimes with soft vegetable down, but no mud is used in the construction. Occasionally we may find the nest in a grassy meadow, where it is usually placed low down in a tussock of grass instead of hanging in the tops of swaying sedges. The eggs are entirely different from those of the Long-billed species, being pure white, unmarked. They number from six to eight; measure about .64 x .50 inch.”

SUBGENUS TELMATODYTES CABANIS.

Bill as long as head, the culmen equal to or longer than the middle toe without claw; hind claw longer than the toe; lower parts pure white medially. Eggs pale chocolate brown or deeper chocolate, sometimes nearly uniform, but usually finely sprinkled with a deeper shade of the ground color (the latter sometimes light Isabella color). (*Ridgway*.)

Cistithorus palustris (WILS.).

LONG-BILLED MARSH WREN.

PLATE XXXIV.

Summer resident; not common. Arrive the last of April to first of May; begin laying the last of May; leave in October.

B. 268. R. 67, 67a. C. 79, 80. G. 28, 316. U. 725.

HABITAT. Temperate eastern North America; accidental in Greenland; west to the Rocky Mountains (replaced westward by *C. palustris paludicola*); breeds throughout its range; winters in the Gulf States, and probably south into eastern Mexico.

SP. CHAR. “Bill about as long as head. Tail and wing nearly equal. Upper parts of a dull, reddish brown, except on the crown, interscapular region,

outer surface of tertials, and tail feathers, which are almost black; the first with a median patch like the ground color; the second with short streaks of white, extending round on the sides of the neck; the third indented with brown; the fourth barred with whitish, decreasing in amount from the outer feather, which is marked from the base to the fifth, where it is confined to the tips; the two middle feathers above like the back, and barred throughout with dusky. Beneath, rather pure white, the sides and under tail coverts of a lighter shade of brown than the back; a white streak over the eye."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	5.20	6.65	2.00	1.75	.77	.55
Female	5.00	6.50	1.95	1.70	.75	.52

Iris dark brown; bill dusky, under pale at base; legs pale brown; feet and claws brown.

This species makes its home in the rank growths of wild rice, reeds, cat tails and rushes bordering ponds and sloughs; differing in this respect from its cousin, the Short-billed, that prefers the marshes and moist meadow lands. In the early settlement of Wisconsin, I had a good opportunity to observe the habits of these birds on the bogs and in the wild rice and rushes, etc., growing in the lower half of Pewaukee Lake, a favorite resort and breeding place at that time for the water fowls and birds that frequent such places. Brother and I knew their haunts well, but few escaping our notice as we silently paddled our light log canoe through the thick growths and openings, hauling it over the bogs and where the water was too shallow to float us. Happy days! As we approached the breeding grounds of these eccentric birds, they never failed to interest; singing, scolding and chattering around us in their hidden retreats, and when we stopped to listen or rest, the inquisitive, saucy little fellows would often come close and peep at us, hanging sideways to the stalks and in every conceivable position, with tails at times almost resting on their backs. If we remained motionless, they would soon, regardless of our presence, commence climbing up and down the stems in search of the insects and small forms of aquatic life that abound in such places, creeping nimbly to the water's edge, swaying head downward in the slender tops, or flitting about, too nervous and restless to be still, hidden one moment, in sight the next, but disappearing

like a flash at the first motion, and, as we moved on, would skulk, hide, sing and chatter around us as at first.

Their song commences with a rather harsh, creaking note, and ends in a rattling twitter. It is full of energy, but not musical. Their flights are short and fluttering, but when crossing an opening, quick and direct. On account of their haunts, they are local in their distribution, and more abundant than they are generally reported to be.

Their nests are sometimes built in a low, swampy bush, where hidden in the grasses, but usually in the growing wild rice, reeds and coarse grasses; they are rather compactly constructed of leaves from the grasses, ingeniously woven in and around the standing stalks; occasionally bits of moss or other soft substances are worked in; a globular nest, about five inches in diameter, with a small round hole on the side for entrance, and lined with feathers and soft, cotton-like substances from plants. For some unaccountable reason the birds build many nests that at the close of the season show no signs of having been occupied. Eggs five to nine, .65 x .46; ground color ashy brown, but so thickly sprinkled with chocolate brown that some specimens appear uniform; in form, oval.

FAMILY **CERTHIDÆ**. CREEPERS.

"Primaries ten; first very short; less than half the second. Tail long, wedge shaped, the feathers stiffened and acute. Bill slender, much compressed, and curved. Outer lateral toe much longest; hind toe exceeding both the middle toe and the tarsus, which is scutellate anteriorly, and very short. Entire basal joint of middle toe united to the lateral."

GENUS **CERTHIA** LINNÆUS.

"Plumage soft and loose. Bill as long as head, not notched, compressed all its lateral outlines decurved. Nostrils not overhung by feathers, linear, with an incumbent thickened scale, as in *Troglodytes*. No rictal bristles, and the loreal and frontal feathers smooth, without bristly shafts. Tarsus scutellate anteriorly, shorter than middle toe, which again is shorter than hind toe. All claws very long, much curved and compressed; outer lateral toe much the longer; basal joint of middle toe entirely adherent to adjacent ones. Wings rather pointed, about equal to the tail, the feathers of which are much pointed, with stiffened shafts. Primaries ten; first less than half the second."

Certhia familiaris americana (BONAP.).**BROWN CREEPER.**

PLATE XXXIV.

Winter sojourner; common in the eastern portion of the State; rare westward. Leave the last of March to first of April; begin to return in October.

B. 275. R. 55. C. 62. G. 21, 317. U. 726.

HABITAT. Temperate eastern North America; west to the Great Plains (represented westward in the Rocky Mountain region by *C. familiaris montana*, and on the Pacific side by *C. familiaris occidentalis*); breeds from the northern United States northward; winters southward into the Gulf States.

SP. CHAR. "Bill about the length of the head. Above, dark brown, with a slightly rufous shade, each feather streaked centrally, but not abruptly, with whitish; rump rusty. Beneath, almost silky white; the under tail coverts with a faint rusty tinge. A white streak over the eye; the ear coverts streaked with whitish. Tail feathers brown centrally, the edges paler yellowish brown. Wings with a transverse bar of pale reddish white across both webs. *Young:* Resembling the adult, but streaks above indistinct, and the feathers there tipped indistinctly with blackish; the rufous restricted to the upper tail coverts. Breast and jugulum with very minute blackish wavings of indistinct bars."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.60	7.85	2.55	2.60	.58	.62
Female	5.25	7.50	2.40	2.35	.55	.60

Iris brown; bill dark brown, with base of under flesh color; legs and feet reddish brown; claws a shade darker.

The natural haunts of these peculiar birds are within the deep woods, but during migration are occasionally met with in our shade trees, orchards, scattering trees upon the prairies and that fringe the streams far out upon the plains. They are not sociable birds, so far as relates to their own kin, and lead a rather isolated, solitary life, except during the mated season, and then are only in pairs; but they are often found associating with the Nuthatches and Titmice; not, I think, from choice, but because the insect life is the most abundant. In their search for the eggs and larva and small forms of life hidden in the interstices of the bark, they climb the trees in a jerky manner, and usually spiral-like; sometimes but a short distance, at others nearly to the top, flying in either case and alighting at the foot of another

tree, and creep upwards as before, repeating the performance, as they cannot creep downward like the Nuthatches. Their feet and sharp claws are admirably adapted to climbing, and their stiff tails keep them erect as they ascend.

They are not wild, but rather shy, and manage to keep on the opposite side of the trees from the intruder. Their presence would seldom be noticed were it not for their oft-repeated, feeble, but sharp, creaky "Cree-cree-cree-cree," and occasional soft, lisping "Chip."

I am unacquainted with their breeding habits, and therefore take pleasure in quoting the following description of their song and nests, from Mr. Wm. Brewster's observations during the months of May and June, in the timbered regions of Lake Umbagog, in Western Maine:

. . . "He is a frequent, but scarcely a persistent singer, and his voice, though one of the sweetest that ever rises in the depth of the northern forests, is never a very conspicuous sound in the woodlands where he makes his home. This is due to the fact that his song is short, and by no means powerful, but its tones are so exquisitely pure and tender, that I have never heard it without a desire to linger in the vicinity until it has been many times repeated. It consists of a bar of four notes—the first of moderate pitch, the second lower and less emphatic, the third rising again, and the last abruptly falling, but dying away in an indescribably plaintive cadence, like the soft sigh of the wind among the pine boughs. I can compare it to no other bird voice that I have ever heard. In the pitch and succession of the notes it somewhat resembles the song of the Carolina Titmouse (*Parus carolinensis*), but the tone is infinitely purer and sweeter. Like the wonderful melody of the Winter Wren, it is in perfect keeping with the mysterious gloom of the woods; a wild, clear voice, that one feels would lose its greatest charm if exposed to cheerful light and commonplace surroundings. . . .

"Among the other voices, I shortly detected the sweet, wild song of the Brown Creeper, and, looking more carefully, spied a pair of these industrious little gleaners winding their way up the trunk of a neighboring tree. Although I watched them

closely, the female soon after, in some way, eluded my sight, and mysteriously disappeared, but the male remained in the immediate vicinity, singing at frequent intervals. Being convinced that they must have a nest somewhere near, I instituted a careful search among the dead trees that stood around, and at length detected a scale of loose bark, within which was crammed a suspicious-looking mass of twigs and other rubbish. A vigorous rapping upon the base of the trunk producing no effect, I climbed to the spot, and was about to tear off the bark when the frightened Creeper darted out within a few inches of my face, and the next moment I looked in upon the eggs.

“The tree selected was a tall dead fir, that stood in the shallow water just outside the edge of the living forest, but surrounded by numbers of its equally unfortunate companions. Originally killed by inundation, its branches had long ago yielded to the fury of the winter storms, and the various destroying agents of time had stripped off the greater part of the bark, until only a few persistent scales remained to chequer the otherwise smooth, mast-like stem. One of these, in process of detachment, had started away from the trunk below, while its upper edges still retained a comparatively firm hold, and within the space thus formed the cunning little architect had constructed her nest. The whole width of the opening had first been filled with a mass of tough but slender twigs (many of them at least six inches in length), and upon this foundation the nest proper had been constructed. It was mainly composed of the fine inner bark of various trees, with an admixture of a little *Usnea* moss and a number of spider’s cocoons. The whole mass was firmly but rather loosely put together, the different particles retaining their proper position more from the adhesion of their rough surfaces than by reason of any special arrangement or interweaving. The general shape of the structure necessarily conformed nearly with that of the space within which it was placed, but a remarkable feature was presented by the disposition of the lateral extremities. These were carried upward to a height of several inches above the middle of the nest, ending in long, narrow points or horns, which gave to the whole somewhat the shape

of a well-filled crescent. In the center of lowest part of the sag thus formed was the depression for the reception of the eggs—an exceedingly neat, cup-shaped hollow, bordered by stripes of soft, flesh-colored bark and lined with feathers from Ducks and other wild birds. The whole was fastened to the concave inner surface of the bark scale rather than to the tree itself, so that when the former was detached it readily came off with it. I afterwards found two old nests, which were perhaps originally built by this same pair of birds, as they were placed on a tree that stood close at hand. They were under a single, enormous piece of bark, but at its opposite lateral extremities. One of them, a nearly shapeless mass of rubbish, was scarcely recognizable, but the other still retained its original shape and finish, and contained an unhatched egg, the contents of which had long since dried away. Probably they represented the homes successively occupied during the two preceding seasons, and it is hence likely that this species, like so many others, returns year after year to breed in nearly the same spot.”

Eggs five to nine, .60x.48; white to creamy white, speckled and spotted with reddish brown, chiefly about the larger end; in form, oval.

FAMILY **PARIDÆ**. NUTHATCHES AND TITS.

“Bill generally short, conical, not notched or decurved at tip. Culmen broad and rounded, not sharply ridged at base. Nostrils rounded, basal, and concealed by dense bristles or bristly feathers. Loral feathers rough and bristly, directed forwards. Tarsi distinctly scutellate; basal joints of anterior toes abbreviated, that of middle toe united about equally for three-fourths its length to the lateral; in *Parinæ* forming a kind of palm for grasping; outer lateral toe decidedly longer than the inner. Primaries ten, the first much shorter than the second. Tail feathers with soft tips. Nest in holes in trees; eggs white, spotted with reddish.”

SUBFAMILY **SITTINÆ**. NUTHATCHES.

“Body depressed. Bill about equal to or longer than the head. Wings much pointed, much longer than nearly even tail; tarsus shorter than the middle toe and claw, which are about equal to the hinder. Plumage more compact.”

GENUS **SITTA** LINNÆUS.

“Bill subulate, acutely pointed, compressed, about as long as the head; culmen and commissure nearly straight; gonys convex and ascending; nostrils

covered by a tuft of bristles directed forward. Tarsi stout, scutellate, about equal to the middle toe, much shorter than the hinder, the claw of which is half the total length. Outer lateral toe much longer than inner, and nearly equal to the middle. Tail very short, broad, and nearly even; the feathers soft and truncate. Wings reaching nearly to the end of the tail; long and acute, the first primary one-third of (or less) the third, or longest."

Sitta carolinensis LATH.

WHITE-BREASTED NUTHATCH.

PLATE XXXIV.

Resident; very common in suitable localities in the eastern part of the State; not uncommon westward. Begin laying about the last of April.

B. 277. R. 51. C. 57. G. 19, 318. U. 727.

HABITAT. Eastern United States and southern British Provinces; resident west to the Rocky Mountains. (Replaced westward by *S. carolinensis aculeata*.)

SP. CHAR. "Above, ashy blue; top of head and neck black; under parts and sides of head to a short distance above the eye white; under tail coverts and tibial feathers brown; concealed primaries white; bill stout. Female with black of head glossed with ashy."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.90	10.80	3.60	2.00	.73	.78
Female	5.60	10.50	3.50	1.90	.71	.75

Iris dark brown; bill black, with basal two-thirds of under bluish; legs and feet slaty, sometimes olive brown; claws blackish.

These singular birds are quite common in the woodlands throughout their range. They often visit the orchards and shade trees about our dwellings, especially during the winter months, but prefer the deep woods for their summer home. Outside of the breeding season, are occasionally to be met with in small flocks and in company with the Chickadees, but as a rule are rather solitary, and when found in company more of an accident than from choice, differing in this respect from others of the genus. They readily attract attention by their peculiar, ringing, nasal "Chank-chank," and odd habit of creeping about on the bodies of trees, head downward as well as upward; this they are enabled to do on account of the formation of their feet and claws. The latter are curved and sharp, and the hind toe long, reaching back on a level with the front ones far enough to balance the body, and is formed to cling to the bark like an

anchor, making their course up and down the trees as safe and easy as a horizontal one, and wholly does away with the use of the tail, so essential to the Creepers and Woodpeckers in sustaining an upright position. They are active, busy bodies, creeping up and down the trees, peeping and prying into every crack and crevice in the bark, in their search for insect life. In the winter months, when the eggs, larva and other forms fail to supply their wants, they feed upon the meat of thin-shelled nuts—I say thin shelled, for their bills are not formed to easily penetrate the thick-shelled ones. They have the habit of storing the nuts away for future use, hiding them in the holes and interstices in the bark, hammering and pressing them securely in place; their bills not being chisel shaped, they cannot drill holes for their reception, as many Woodpeckers do. (All the Titmouse family at times eat the meat of nuts, though naturally insectivorous. I know this from keeping them in confinement; the pecan nut is their favorite.) They occasionally visit fallen trees, and I have seen them upon the ground, but their home is on the upper bodies and branches of trees.

During the breeding season the birds are very attentive lovers. The male feeds his mate while she is sitting, and warbles his feeble, twittering, “Twea” notes (hardly musical enough to be called a song) to please her, and, when the little ones are hatched, faithfully assists in caring for their wants.

Their nests are built in decaying places in trees, the entrance usually a knot hole. The rotten wood is removed to suit, and lined chiefly with rabbits’ fur; in some cases a few fine grass leaves and downy feathers. Eggs four to nine (rarely nine, usually five or six), .76 x .56; they vary greatly in size; rosy white, thickly speckled and spotted with reddish brown and lilac, thickest about the larger end; in form, oval.

***Sitta canadensis* LINN.**

RED-BREASTED NUTHATCH.

PLATE XXXIV.

Winter sojourner; rare. Begin to arrive from the north in October; return in April.

B. 279. R. 52. C. 59. G. 20. 319. U. 728.

HABITAT. The whole of wooded temperate North America; south in winter to the southern border of the United States; breeding from the northern United States and southern Colorado, in the Rocky Mountains, northward. (Largely a resident within its breeding limits.)

SP. CHAR. *Male adult:* Upper parts leaden blue (brighter than in *S. carolinensis*), the central tail feathers the same; wings fuscous, with slight ashy edgings, and concealed white bases of the primaries. Entire under parts rusty brown; very variable in shade, from rich fulvous to brownish white, usually palest on the throat, deepest on the sides and crissum; tail feathers, except the middle pair, black, the lateral marked with white. Whole top and sides of head and neck glossy black, that of the side appearing as a broad bar through the eye from bill to side of neck, cut off from that of the crown by a long, white superciliary stripe, which meets its fellow across the forehead. Bill dark plumbeous, paler below. Feet plumbeous brown. *Female:* Crown like the back; lateral stripe on the head merely blackish. The under parts average paler than those of the male, but there is no constancy about this. Young birds resemble the female. (*Coues.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	4.60	8.40	2.65	1.50	.60	.60
Female	4.30	8.20	2.55	1.35	.60	.55

Iris dark brown; bill slaty black, with base of under bluish; legs, feet and claws brown. (My notes of a specimen shot in May show legs and feet dull greenish yellow; claws light brown.)

These birds, in their general habits and actions, are similar to the White-breasted, but usually move about from tree to tree in small, straggling flocks, uttering, and often repeating, a rather sharp, wiry note. They are quite common within their northern range, but rather rare southward. Mr. H. W. Henshaw gives the following description of their nesting habits, nests and eggs:

“In the pine woods near Fort Garland, southern Colorado, I found it breeding in June, and, though less abundant than either the Pigmy or Slender-billed varieties, it was still by no means rare. Its habits, while differing in no notable degree from those of its allies, are possessed of even more of the energy and restless activity which belong to the whole tribe; and at this, the nesting season, the males especially were busy from morning till night, roving about among the pines and aspens,



PLATE XXXV.

1. GILDED TITMOUSE; Male. 2. Female. 3. Female. 4. Female. 5. Female. 6. Female. 7. Female. 8. Female. 9. Female. 10. Female. 11. Female. 12. Female. 13. Female. 14. Female. 15. Female. 16. Female. 17. Female. 18. Female. 19. Female. 20. Female.

engaged in hunting not only on their own account, but also for their mates engaged in the cares of incubation. In these duties, however, both sexes take part, and the females were occasionally found abroad while their place on the nest was filled by the males. The single nest examined was found in a small pine stub, a few feet from the ground. The hole was excavated in the rotten wood to the depth of five inches, no especial care having been taken to render this smooth and symmetrical, and was thoroughly lined at bottom with fine shreds of pine bark. The eggs, five in number, were far advanced toward hatching; color grayish white, thinly spotted with reddish dots, confluent at the larger end."

Eggs four to eight (usually five or six), .60x.50; in form, oval to rounded oval.

SUBFAMILY PARINÆ. TITMICE.

"Body compressed. Bill shorter than head. Wings rounded, equal to or shorter than the rounded tail. Second quill as short as the tenth. Tarsus longer than the middle toe and claw, which are about equal to the hinder; soles of toes widened into a palm. Plumage rather soft and lax."

GENUS **PARUS** LINNÆUS.

Bill with either the culmen or gonys (sometimes both) decidedly convex; nostrils wholly concealed; plumage very lax. Tail not conspicuously longer than wing, rounded. (*Ridgway*.)

SUBGENUS LOPHOPHANES KAUP.

"Crown with a conspicuous crest. Bill conical; both upper and lower outlines convex. Wings graduated; first quill very short. Tail moderately long and rounded. Nests in hollow trees; eggs white, with fine red dottings."

Parus bicolor LINN.

TUFTED TITMOUSE.

PLATE XXXV.

Resident; abundant in the eastern part of the State; rare in the western portion. Begin laying about the middle of April.

B. 285. R. 36. C. 40. G. 16. 320. U. 731.

HABITAT. Eastern United States; north to New Jersey and southern Nebraska (straggling to southern New England, etc.); south to the Gulf coast, including Florida (replaced in western Texas by *P. atricristatus*); resident throughout its range.

SP. CHAR. "Above, ashy; a black frontal band. Beneath, dull whitish; sides brownish chestnut, of more or less intensity. Feathers of the crown elongated into a flattened crest, which extends back as far as the occiput. Bill conical; lower edge of upper mandible nearly straight at the base. Fourth and fifth quills equal; third a little shorter than seventh; second rather shorter than the secondaries. Tail nearly even, the outer about .20 of an inch shorter than the longest. Upper parts ash color, with a tinge of olivaceous. Forehead dark sooty brown. The feathers of the upper part of the head and crest obscurely streaked with lighter brown. Under parts of head and body, sides of head, including auriculars, and a narrow space above the eye, dirty, yellowish white, tinged with brown; purest on the side of the head, the white very distinct in the loreal region, and including the tuft of bristly feathers over the nostrils, excepting the tips of those in contact with the bill, which are blackish. The sides of the body and the under tail coverts are tinged with yellowish brown. The quills and tail feathers are edged with the color of the back, without any whitish."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.50	10.00	3.20	3.00	.80	.47
Female . . .	6.25	9.75	3.10	2.85	.80	.45

Iris dark brown; bill black; legs, feet and claws lead color.

The natural haunts of these restless, noisy birds are within the woodlands; but they often, especially during the fall and winter months, frequent the orchard and shade trees about our dwellings. A pert, bold bird, that never skulks and hides, but, in a scolding, saucy manner, with crest proudly erected, hops about among the branches of the trees, assuming various easy and comic positions, often swaying from the tips of the slender twigs, in its search for food. When an insect too large to swallow or a nut is found, they hammer away at the same until in condition to eat, and then, Hawk-like, retain their position on the perch with one foot, and grasp the food in the other, and daintily pick off bits from between the toes.

The birds are easily tamed, and, unlike the Nuthatches and Chickadees, soon become reconciled to confinement, unless captured at the time their hearts are set on mating. I have had them take food and drops of water from my fingers the third day after capture.

The males commence singing often early in February, and sing loudly and defiantly during the early part of the breeding season. Their song is but a repetition of syllables, that sound much like "Che'o, che'o, che'o," and at times, "Cho, cho, cho,

cho," uttered in a clear, whistling, musical tone. Their ordinary notes are various. Their flights are short, irregular, and rather undulating. They are often met with in small flocks, but do not move in harmony together, each acting independently of the others, as if they came together by accident, rather than from choice.

The mated pairs are very attentive lovers and parents. The males ever on the alert, fussing about, scolding, challenging and driving rivals and intruders away; and while their mates are building a nest, they do not aid, but proudly follow her back and forth, singing their very best to cheer her, and in so doing betray their nesting place, and make it an easy find.

Their nests are placed in deserted Woodpecker holes, and natural cavities in trees. They are loosely constructed of leaves and moss, and lined with a fine, soft, fibrous, cotton-like substance, and hairs from cattle. Eggs five to eight, .75 x .54; white to creamy white, sprinkled with rusty red, thickest and somewhat running together around larger end, with here and there a few lilac stains; in form, oval.

SUBGENUS PARUS LINNAEUS.

"Head not crested; body and head full; tail moderately long, and slightly rounded; bill conical, not very stout; the upper and under outlines very gently and slightly convex. Tarsus but little longer than middle toe; head and neck generally black or brown, with sides white. Nest in holes; eggs white, sprinkled with red."

Parus atricapillus LINN.

CHICKADEE.

PLATE XXXV.

Resident; abundant in the eastern part of the State; common to the middle portion; rare westward. Begin laying early in April.

B. 290. R. 41. C. 44. G. 17. 321. U. 735.

HABITAT. Eastern North America; west to the edge of the Great Plains; south into the northern borders of the Indian Territory and southern Missouri, but, east of the Mississippi River, rarely south of latitude 40°. Resident throughout their range.

SP. CHAR. *Adult*: Entire pileum and cervix glossy black; chin, throat and malar region black, this broken posteriorly by whitish tips to the feathers; sides of head and neck white; upper parts ash gray, more or less tinged with yellowish; wings blackish, the feathers edged with light ashy, the greater coverts and tertials broadly edged with white; tail dusky, the feathers edged with ashy, inclining to white on lateral retrices. Median lower parts (from jugulum back) white, lateral portions buff; bill black; feet bluish plumbeous; iris dark brown. *Young*: Very similar to the adult, but black of pileum and cervix without gloss, that of the throat more sooty, buff of sides less distinct, and plumage of looser texture. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.50	8.00	2.60	2.60	.67	.33
Female . . .	5.35	7.75	2.50	2.50	.65	.32

Iris dark brown; bill, feet and claws black; legs slate brown.

The natural home of these sprightly little birds is within the woodlands, but they often frequent orchards and gardens, and in severe winter weather, when the snow lies upon the branches of the trees and fills the crevices in the bark, they visit the door-yards to pick up the scattered crumbs, and if a piece of fresh meat is hung up in a tree or upon the side of an outbuilding, they will come daily to pick off frozen bits, until the weather moderates and melts the snow and ice that covered the eggs, larva, etc., upon which they are accustomed to feed. The birds are very social and move about in small flocks, a happy group, chatting away, and "merrily singing their Chick-a-dee-dee."

In the early mating season they have a loud, clear, whistling song, "Péto," uttered at short intervals, and various quaint, chatty call notes. Graceful little fellows! that fly from tree to tree and actively search the branches, often swinging feet uppermost from the ends of slender twigs, to pick out a seed, an insect from a leaf, or larva hidden in a bud. Pretty birds! that with their familiar, unsuspicious ways win our love; and in addition to this should receive a warm welcome for the good they do in ridding the forest and fruit trees of their many pests. Mr. Samuels, in "Birds of New England," says:

"In some localities the Titmouse is regarded as injurious, from the fact that it is often seen among the branches and leaves of the fruit trees and shrubs, pecking off and destroying the

buds. It does not do this to the bud for food, but really for the grub contained in it. If these buds be examined after the Chickadee has thrown them away, the burrow of a grub or caterpillar will be found in the very heart of them. The bird is able to discover the presence of these vermin much more readily than man could, and it is thus able to assail them at a period of their existence when they are doing the most harm. But it is not the insect and the larva alone that he destroys. His microscopic eyes enable him to discover their eggs deposited on and in the crevices of the bark and in the buds, and in an instant he can destroy the whole future brood. The eggs of the moth of the destructive leaf-rolling caterpillar, those of the canker worm, the apple tree moth, and others of these well-known plagues, are greedily eaten up by it; and this is in the inclement winter, when most of our other birds have abandoned us for a more genial climate.

“In the summer time, the Chickadee’s labors are more easily noticed; and as he raises a large brood of young, the female laying six or eight eggs at a litter, he is very busy through the whole day in capturing vast quantities of caterpillars, flies and grubs. It has been calculated that a single pair of these birds destroy, on the average, not less than five hundred of these pests daily; a labor which could hardly be surpassed by a man, even if he gave his whole time to the task.

“‘Moreover, the man could not be successful at so small a cost, for, setting aside the value of his time and the amount of a laborer’s daily wages, he could not reach the denser and loftier twigs, on which the caterpillars revel and which the Titmouse can traverse with perfect ease. No man can investigate a tree, and clear it of the insect hosts that constantly beleaguer it, without doing some damage to the buds and young leaves by his rough handling; whereas the Chickadee trips along the branches, peeps under every leaf, swings himself round upon his perch, spies out every insect, and secures it with a peck so rapid that it is hardly perceptible.’

“In some observations made on the habits of this and some other birds in Paris, it was found that the Titmouse destroys, at

the lowest computation, over two hundred thousand eggs alone, of noxious insects, in the course of a year. That one small bird is thus able to accomplish so much good, in destroying these myriads of vermin, is an appeal to the good sense of the farmer for the protection of the whole class that should not be slighted."

Their nests are placed near the ground, in holes made by themselves in decaying trees and stumps. They are composed of bits of moss, interwoven with fur and fine hair, and occasionally a few downy feathers. Eggs four to eight, .60x.47; white, speckled with reddish brown and lilac stains, generally the thickest around the larger end; in form, oval.

***Parus atricapillus septentrionalis* (HARRIS).**

LONG-TAILED CHICKADEE.

PLATE XXXV.

Resident; quite common in the western part of the State, along the streams fringed with trees and bushes; rare in the eastern portion, though not uncommon in winter. Begin laying about the middle of April.

B. 289, 289a. R. 41a. C. 45. G. 18, 322. U. 735a.

HABITAT. Rocky Mountain regions, from New Mexico to Alaska; west to the edge of the Great Basin; east to eastern Kansas and Manitoba; a resident throughout their range. (From observations, I am led to think they are partially migratory.)

SP. CHAR. "Head above and below black, separated by white on the sides of the head; back brownish ash. Beneath, white, tinged with pale brownish white on the sides. Outer tail feathers, primaries and secondaries broadly edged with white, involving nearly the whole outer web of outer tail feathers. Tail much graduated; the outer feather about .50 of an inch shorter than the middle. Second quill about as long as the secondaries.

"This race is very similar to the *P. atricapillus*, but differs from it somewhat as *atricapillus* does from *carolinensis*. Its size is much greater; the tail proportionally longer, and much more graduated; the white of the wing and tail is purer and more expanded. The bill appears to be stouter and more conical. The back has perhaps a little more yellowish. The spurious or first primary is larger."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	5.80	8.60	2.75	2.80	.69	.33
Female . . .	5.50	8.25	2.60	2.65	.67	.33

Iris dark brown; bill and claws black; legs and feet bluish slate.

I am unable to detect any difference in the habits, actions or notes of this large form from the eastern bird, our common Chickadee, and they occasionally interbreed.

Eggs four to eight, .62x.48; dull white, rather evenly speckled with reddish brown, and a few shell stains of lilac; in form, oval.

FAMILY SYLVIIDÆ. WARBLERS, KINGLETS, GNATCATCHERS.

"Bill much shorter than head, slender, broad, and depressed at the base, distinctly notched and decurved at the tip. Culmen sharp-ridged at base. Frontal feathers reaching to the nostrils, which are oval, with membrane above, and overhung—not concealed—by a few bristles or by a feather. Rictal bristles extending beyond nostrils. Tarsi booted or scutellate. Basal joint of middle toe attached its whole length externally, half way internally. Primaries ten; spurious primary about half the second, which is shorter than seventh. Lateral toes equal."

SUBFAMILY REGULINÆ. KINGLETS.

"Wings longer than the emarginated tail. Tarsi booted, or without scutellar divisions. This subfamily embraces but a single well-defined North American genus."

GENUS REGULUS CUVIER.

"Bill slender, much shorter than the head, depressed at base, but becoming rapidly compressed; moderately notched at tip. Culmen straight to near the tip, then gently curved. Commissure straight; gonys convex. Rictus well provided with bristles; nostril covered by a single bristly feather, directed forwards (not distinct in *Calendula*). Tarsi elongated, exceeding considerably the middle toe, and with scutella. Lateral toes about equal; hind toe with claw longer than middle one by about half the claw. Claws all much curved. First primary about one-third as long as the longest; second equal to fifth or sixth. Tail shorter than wings, moderately forked, the feathers acuminate. Colors, olive green above, whitish beneath. Size, very small."

***Regulus satrapa* LIGHT.**

GOLDEN-CROWNED KINGLET.

PLATE XXXV.

Winter sojourner; rare; in migration quite common. Leave in March to first of April; begin to return about the middle of October.

B. 162. R. 33. C. 34. G. 15. 323. U. 748.

HABITAT. Eastern and northern North America; breeding from the extreme northern United States northward; wintering

nearly throughout the eastern United States, southward to Guatemala. (Replaced on the Pacific coast from California to Sitka by *R. satrapa olivaceus*.)

SP. CHAR. "Above, olive green, brightest on the outer edges of the wing. Tail feathers tinged with brownish gray towards head. Forehead, a line over the eye, and space beneath it, white. Exterior of crown, before and laterally, black, embracing a central patch of orange red, encircled by gamboge yellow. A dusky space around the eye. Wing coverts with two yellowish white bands; the posterior covering a similar band on the quills, succeeded by a broad dusky one. Under parts dull whitish. Female without the orange red central patch. Young birds without the colored crown, and black head markings obsolete or only faintly indicated."

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	4.20	6.85	2.25	1.90	.68	.30
Female . . .	3.90	6.60	2.15	1.72	.65	.28

Iris brown; bill blackish, the base of under sometimes pale; legs and feet brown; soles of feet yellowish; claws black.

These diminutive little beauties frequent the orchards and groves, especially during migration, and in the winter months, but their favorite resorts are within the deep woods. They usually move about in small flocks, and often in company with the Titmice, and like the latter live largely in the branches of the trees, flitting here and there, and hopping about with half-spread wings, in various graceful attitudes; uttering, in a cheerful, contented manner, their soft call note, "Te-ze, te-ze," as they peep into the fissures in the bark, and under the leaves, and flutter before the buds and flowers, or dart from the perch to capture the passing insect. A picture of restless, active existence, that hardly braves the coldest storms.

In the early breeding season, the males sing softly and sweetly, a low, lisping, whistling warble, that I have often stopped to listen to in the deep northern evergreen forests. It is not attractive, and would hardly be noticed by the common observer, as it rises but little above the murmur of the leaves; but, to the lover of nature, it falls upon the ear in pleasing harmony with its surroundings. The following is a description of a nest containing ten eggs, collected in the spring of 1882, at Grand Manan, New Brunswick:

The nest was built in thick twigs, at the end of a spruce

limb, about fifteen feet from the ground. It was partially suspended, like the Vireos, but largely supported by the stiff branching twigs, within which it was well concealed, and was composed almost wholly of green tree moss; roundish in shape, two and a half inches deep inside, and one and a half inches in diameter at the top. The outside was beautifully dotted with lichens and feathers, and warmly lined with downy feathers. Eggs: .50x.40, .50x.40, .50x.41, .50x.41, .50x.41, .50x.41, .50x.42, .50x.42, .50x.42, .50x.43; in form, oval.

***Regulus calendula* (LINN.).**

RUBY-CROWNED KINGLET.

PLATE XXXV.

An occasional winter sojourner; in migration common, at times abundant; the bulk leave in April; a few remain until the first of May; begin to return early in September.

B. 161. R. 30. C. 33. G. 14. 324. U. 749.

HABITAT. North America; north to the Arctic coast; south to Guatemala; breeding in the higher mountains from Arizona and northern borders of the United States northward; wintering in the more southern States southward.

SP. CHAR. "Above, dark greenish olive, passing into bright olive green on the rump and outer edges of the wings and tail. The under parts are grayish white tinged with pale olive yellow, especially behind. A ring round the eye, two bands on the wing coverts, and the exterior of the inner tertials, white. *Male*: Crown with a large concealed patch of scarlet feathers, which are white at the base. *Female*: Without the red on the crown. This species of *Regulus* appears to lack the small feather which, in *satrapa*, overlies and conceals the nostrils, which was probably the reason with Cabanis and Blyth for placing it in a different genus. There is no other very apparent difference of form, however, although this furnishes a good character for distinguishing between young specimens of the two species."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.50	7.30	2.30	1.80	.72	.33
Female . . .	4.20	7.05	2.20	1.65	.70	.30

Iris brown; bill blackish, with base of under usually paler; legs, feet and claws dark brown; bottoms of feet yellowish.

These elegant little birds are similar in habits and actions to the Golden-crowned Kinglets, and were it not for their surpris-

ingly clear, tender, varied, resonant song (heard during the mated and early breeding season), a detailed description would be hardly necessary. As it is, I take pleasure in quoting from Dr. Elliott Coues' happy description of the birds:

"To observe the manners of the Ruby-crowned, one need only repair, at the right season, to the nearest thicket, coppice, or piece of shrubbery, such as the Titmice, Yellow-rumps and other Warblers love to haunt. These are its favorite resorts, especially in the fall and winter; though sometimes, in the spring more particularly, it seems to be more ambitious, and its slight form may be almost lost among the branchlets of the taller trees, where the equally diminutive *Parula* is most at home. We shall most likely find it not alone, but in straggling troops, which keep up a sort of companionship with each other as well as with different birds, though each individual seems to be absorbed in its peculiar business. We hear the slender, wiry note, and see the little creatures skipping nimbly about the smaller branches in endlessly varied attitudes, peeping into the crevices of the bark for their minute insect food, taking short, nervous flights from one bough to another, twitching their wings as they alight, and always too busy to pay attention to what may be going on around them. They appear to be incessantly in motion—I know of no birds more active than these—presenting the very picture of restless, puny energy, making 'much ado about nothing.' . . .

"One of the most remarkable things about the Ruby-crowned is its extraordinary powers of song. It is really surprising that such a tiny creature should be capable of the strong and sustained notes it utters when in full song. The lower larynx, the sound-producing organ, is not much bigger than a good-sized pin's head, and the muscles that move it are almost microscopic shreds of flesh. If the strength of the human voice were in the same proportion to the size of the larynx, we could converse with ease at the distance of a mile or more. The Kinglet's exquisite vocalization defies description; we can only speak in general terms of the power, purity and volume of the notes, their faultless modulation and long continuance. Many doubtless

have listened to this music without suspecting that the author was the diminutive Ruby-crowned, with whose common-place utterance, the slender, wiry 'Tisp,' they were already familiar. . . ."

Their nests are usually built in clustering twigs at the end of a branch in evergreen trees, the spruce the favorite. The few that have been found range from near the ground to sixty feet in height. They are partially suspended to the upper branching twigs, and securely supported by others from beneath; a semi-pensile, roundish, bulky structure, composed of shreds of soft bark, fine moss, lichens, cobwebs, etc., and thickly lined with feathers, that are ingeniously woven into the structure, the upper feathers usually placed so as to curve towards the center and nearly conceal the entrance. Eggs five to nine, .55x.43; dull white to pale buff, minutely but faintly spotted (chiefly about the larger end) with light brown; sometimes they are nearly plain; in form, oval to rounded oval.

SUBFAMILY POLIOPTILINÆ. GNATCATCHERS.

Wing not longer than the graduated tail; anterior tarsal envelope distinctly scutellate; outer tail feathers with conspicuous white tips and edgings (sometimes almost entirely white). (*Ridgway.*)

GENUS POLIOPTILA SCLATER.

"Bill slender, attenuated, but depressed at the base; nearly as long as the head, distinctly notched at the tip, and provided with moderate rictal bristles. Nostrils rather elongated, not concealed, but anterior to the frontal feathers. Tarsi longer than middle toe, distinctly scutellate; the toes small; the hinder ones scarcely longer than the lateral; its claws scarcely longer than the middle. Outer lateral toe longer than the inner. First primary about one-third the longest; second equal to seventh. Tail a little longer than wings, moderately graduated; the feathers rounded. Nest felted and covered with moss or lichens. Eggs greenish white, spotted with purplish brown."

Polioptila cærulea (LINN.).

BLUE-GRAY GNATCATCHER.

PLATE XXXV.

Summer resident; common in the eastern part of the State; rare westward; in migration, common throughout the State. Arrive in April; begin laying the first to middle of May; the bulk leave in September; a few occasionally remain into October.

B. 282. R. 27. C. 36. G. 13. 325. U. 751.

HABITAT. United States, chiefly south of latitude 42°; wintering in the Gulf States, the Bahamas, Cuba, and eastern Mexico to Guatemala; breeding from Cuba northward throughout their range. (Replaced in Arizona, California and western Mexico by *P. caerulea obscura*.)

SP. CHAR. "Above, grayish blue, gradually becoming bright blue on the crown; a narrow frontal band of black extending backwards over the eye; under parts and lores bluish white, tinged with lead color on the sides. First and second tail feathers white except at the extreme base, which is black, the color extending obliquely forward on the inner web; third and fourth black, with white tip, very slight on the latter; fifth and sixth entirely black. Upper tail coverts blackish plumbeous; quills edged externally with pale bluish gray, which is much broader and nearly white on the tertials. Female without any black on the head."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	4.50	6.60	2.10	2.10	.68	.40
Female	4.30	6.30	1.95	1.95	.65	.38

Iris dark brown; bill black, the under sometimes pale at base; legs, feet and claws blackish.

These delicate little birds are as much at home in the shrubby bushes on the hillsides, or mesquite growths on the plains, as within the treetops of the heavily-timbered bottom lands; a nervous, restless species, that, in their quest of insect life, nimbly skip from branch to branch, with partially-spread wings, and flirting tails, held more or less erect, now and then darting like a flash into the air to catch the passing flies; a tireless picture of bustling energy, that only ceases with the day.

They are not naturally social, and when met with in small flocks straggle about regardless of the movements of others. Even their wiry "Tsee-tsee-tsee" sounds more like an utterance of content and self-satisfaction than a call note. They also occasionally utter, much like the Catbird, the faint mew of a kitten. Their soft, warbling love song is varied, tender, and full of melody, but so low the hearer must stop to listen in order to fully catch its silvery tones.

Their nests are usually saddled between and woven to upright twigs in the branches of treetops, ranging from ten to fifty feet from the ground; beautiful nests, composed of stem-like stemlets, bits of leaves and feathers, woven together with

spiders' webs, thickly dotted on the outside with lichens, and lined with a soft, downy substance from plants. Eggs four or five, .56 x .44; pale greenish white, spotted and blotched with reddish brown, lilac and slate, thickest and running together around the larger end; in form, oval to rounded oval.

FAMILY **TURDIDÆ**. THRUSHES, SOLITAIRES, STONECHATS,
BLUEBIRDS, ETC.

"Nostrils oval; bristles or bristly points about the mouth; wings moderate, not reaching, when folded, beyond the middle of the tail, and not over one and a third times as long as the latter; tip formed by third to sixth quill; outer secondary reaching, in closed wing, three-fourths or more the length of the longest primary; spurious quill longer, sometimes one-half the second; tarsi booted."

SUBFAMILY **MYADESTINÆ**. SOLITAIRES.

Gonys not more than one-third as long as commissure; the bill short and rather depressed. (*Ridgway*.)

GENUS **MYADESTES** SWAINSON.

"Occipital feathers full and soft; plumage rather loose; bill weak, much depressed; commissure nearly straight; hind toe longer than inner lateral; toes deeply cleft; closed wing externally with an exposed light band across the base of the quills, and another near the end, separated by a darker one; tail somewhat graduated on the sides."

Myadestes townsendii (AUD.).

TOWNSEND'S SOLITAIRE.

PLATE XXXV.

An occasional fall and winter visitant in the western part of the State.

B. 235. R. 25. C. 169. G. 12. 326. U. 754.

HABITAT. Western United States, chiefly in the mountainous regions; north to British Columbia; (not reported south of the United States;) east to Dakota and Texas. (A straggler was killed December 16, 1875, at Waukegan, Illinois. *Nelson*.)

SP. CHAR. "Tail deeply forked. Exposed portion of spurious quill less than one-third that of the second; fourth quill longest; second a little longer than sixth. Head not crested. General color bluish ash, paler beneath; under wing coverts white. Quills with a brownish yellow bar at the base of both webs mostly concealed, but showing a little below the greater coverts and alula; this succeeded by a bar of dusky, and next to it another brownish yellow across the outer webs of the central quills only. Tertiaries tipped with white. Tail feathers dark brown; the middle ones more like the back; the lateral with the outer web and tip, the second with the tip only, white. A white ring round the eye.

Young birds have a large, triangular, pale ochraceous light spot on the end of each feather (rather paler below), bounded externally by a narrow border of blackish; the quills and tail feathers as in the adult."

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	8.50	13.75	4.60	4.25	.78	.50
Female....	8.25	13.50	4.50	4.15	.75	.48

Iris dark brown; bill, legs, feet and claws black.

These birds, notwithstanding the name they bear, are quite social during the fall and winter months, and often associate together in small flocks or family groups. They seldom visit the habitations of man, preferring for their haunts the wild mountain sides, deep, rocky ravines, and shrubby growths upon the plains. They are not timid or shy, as might be expected from their retiring habits, and as their favorite perching places are upon dead limbs or the topmost branches of trees. They are usually in sight, and if not, make their presence known by their loud, ringing call note, and charming song, so varied and full of silvery melody, that echoes in the cañons and on the mountain sides from the depth of winter until the close of the breeding season, and occasionally in the fall and early winter, but not in as full and energetic manner as during the mated time.

They are quite common throughout their range, making their summer home in the higher mountain regions and wintering in the foothills among the cedars and upon the plains. They are expert flycatchers, but during the winter months feed largely upon the cedar berries; they occasionally search for food upon the ground, but not in a rasorial manner. In flight and actions they are easy, and seem to partake of and share somewhat the characteristics of the Flycatchers, and of our Bluebirds.

Their nests are placed in slight depressions in the ground, hollows in logs, fissures in rocks and other similar places. They are quite bulky, and loosely constructed of bits of twigs, stems, pine needles, grasses, etc., and lined at times with soft vegetable matter. Eggs three to six (usually four), .92x.68; they vary greatly in size and markings; ground color whitish, speckled and spotted with reddish brown, usually thickest and somewhat confluent around the larger end; in form, oval.

SUBFAMILY TURDINÆ. THRUSHES.

Gonys more than one-third as long as commissure, the bill more slender and compressed. (*Ridgway*.)

GENUS **TURDUS** LINNÆUS.

"Bill conical, subulate, shorter than the head; the tip gently decurved and (except in *Hesperocichla*) the rictus with moderate bristles; the wings rather long and pointed, with small first primary (less than one-fourth the second); wings considerably longer than the tail, which is firm, nearly even, with broad feathers. Tarsi variable, seldom as long as the skull, the scutella fused into a continuous plate, only in rare individual instances showing indications of the lines of separation."

SUBGENUS **HYLOCICHLA** BAIRD.

"Smallest species. Bill short, broad at base; much depressed. Tarsi long and slender, longer than middle toe and claw by the additional length of the claw; outstretched legs reaching nearly to tip of tail. Body slender. *Color*: Above, olivaceous or reddish; beneath, whitish; breast spotted; throat without spots."

Turdus mustelinus GMEL.

WOOD THRUSH.

PLATE XXXV.

Summer resident; abundant in the eastern part of the State; rare in the western portion. Arrive the middle of April to the first of May; begin laying about the middle of May; the bulk leave in September; a few linger late into October.

B. 148. R. 1. C. 6. G. 1. 327. U. 755.

HABITAT. Eastern United States; north to Massachusetts, Ontario, Wisconsin and eastern Dakota; west to the Great Plains; south in winter to Cuba and Guatemala.

SP. CHAR. Above, bright tawny cinnamon brown, more rufescent anteriorly, more grayish posteriorly; auriculars streaked white and dusky. Lower parts white, the breast and sides with large blackish spots. *Adult, in summer*: Above, cinnamon brown, becoming bright tawny rufous on the head, the color clearer and somewhat lighter on the cervix; wings less reddish than the back; rump still more olivaceous, and tail decidedly grayish brown. A pure white orbital ring; lores grayish white, more gray immediately in front of the eye; auriculars dusky, distinctly streaked with whitish. A white malar stripe, curving upward beneath the auriculars, the anterior portion speckled with dusky. Entire lower parts white, usually somewhat tinged with buff on the breast; sides of throat bounded by a stripe of aggregated blackish cuneate streaks; jugulum marked with distinct cuneate or deltoid; the breast and sides with larger, broader, inversely cordate spots of black; abdomen and crissum immaculate; throat with very few minute spots, or entirely immaculate. *Adult, in winter*: Similar, but

jugulum more decidedly tinged with buff. *Young, first plumage:* Similar to the adult, but feathers of the pileum and back with paler (ochraceous) shaft streaks; middle wing coverts with terminal triangular spots of ochraceous, the greater coverts narrowly tipped with the same; spots on breast, etc., less sharply defined. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	8.20	13.40	4.40	3.15	1.25	.64
Female . . .	8.00	13.15	4.30	3.00	1.22	.62

Iris brown; bill—upper and end of lower, dark brown, rest brownish yellow; legs and feet flesh color; claws light brown.

The natural haunts of this solitary species are within the deep forests upon the bottom lands, bordering streams, and remote from the habitations of man, although, where the locations are favorable, I have occasionally found them nesting in orchards and gardens. They make their home in the lower branches of the trees, and, in their search for food, often hop over the ground, like the Robins. They feed chiefly upon worms, beetles, grasshoppers, etc., and berries in their season. They are wary in their habits, but gentle in their deportment, and move about without ostentation, in an easy, dignified, graceful manner, and, when approached, do not skulk and hide, like the Towhees and Chats, but hop openly about, uttering now and then their sharp alarm or call note, "Tuck," which is often rapidly repeated, taking good care to keep at a safe distance from the intruder by gliding noiselessly from tree to tree.

During the breeding season, the short, silvery, flute-like song of the males rings out in sweet, clear, indescribable notes, that even the Mockingbirds do not attempt to imitate. Mr. Nuttall happily says:

"At the dawn of morning he now announces his presence in the woods from the top of some tall tree rising through the dark and shady forest; he pours out his few clear and harmonious notes in a pleasing reverie, as if inspired by the enthusiasm of renovated nature. The prelude to this song resembles almost the double tongueing of the flute, blended with a tinkling, shrill and solemn warble, which reëchoes from his solitary retreat like the dirge of some sad recluse who shuns the busy haunts of life. The whole air consists, usually, of four parts, or bars, which suc-

ceed in deliberate time, and finally blend together in impressive and soothing harmony, becoming more mellow and sweet at every repetition. Rival performers seem to challenge each other from various parts of the wood, vying for the favor of their mates, with sympathetic responses and softer tones, and some, waging a jealous strife, terminate the warm dispute by an appeal to combat and violence. Like the Robin and the Thrasher, in dark and gloomy weather, when other birds are sheltered and silent, the clear notes of the Wood Thrush are heard through the dropping woods, from dawn to dusk, so that, the sadder the day, the sweeter and more constant is his song. His clear and interrupted whistle is likewise often nearly the only voice of melody heard by the traveler to mid-day, in the heat of summer, as he traverses the silent, dark and wooded wilderness, remote from the haunts of men. It is nearly impossible by words to convey any idea of the peculiar warble of this vocal hermit; but amongst his phrases, the sound of 'Air-ō-ee,' peculiarly liquid, and followed by a trill, repeated in two interrupted bars, is readily recognizable. At times their notes bear a considerable resemblance to those of Wilson's Thrush, such as 'Eh rhehu, vrhehu,' then varied to 'Eh villia, villia, eh villia, vrhehu,' then, 'Eh velu, villu,' high and shrill."

Their nests are usually saddled on to a horizontal limb of a tree, six to ten feet from the ground. They are composed outside of loose stems of weeds and leaves, attached to a closely compact body of pulverized leaves, fibers and lint-like substances from plants, plastered together with saliva and tracings of mud, and lined with small, fibrous roots. Eggs three to five, 1.02 x .74 (they vary greatly in size); greenish blue; in form, oval.

***Turdus fuscescens* STEPH.**

WILSON'S THRUSH.

Migratory; rare. I have never met with the birds in the western part of the State. Arrive the last of April to first of May; begin to return early in September; none, to my knowledge, remain later than the middle of October.

B. 151. R. 2. C. 7. G. 2. 328. U. 756.

HABITAT. Eastern United States; north to Newfoundland, the Magdalen Islands, Manitoba, etc.; west to the plains; breeding from about latitude 41° northward; wintering in the Southern States and Cuba. (Replaced in the Rocky Mountain regions by *T. fuscescens salicicolus*. I think that I have seen this bird in western Kansas, but am not certain.)

SP. CHAR. Above, uniform rather light fulvous brown, varying in precise shade; no trace of a lighter orbital ring, the sides of the head being nearly uniform grayish, as in *T. alicia*. Jugulum and posterior portion of throat creamy buff, with cuneate spots of brown, usually a little darker than the color of the crown, these markings narrower and more distinct anteriorly; chin and upper part of throat nearly white, immaculate, but bordered along each side by a longitudinal series of brown streaks, sometimes blended into a single stripe, below an ill-defined whitish or buffy malar stripe; lores pale grayish or grayish white; auriculars darker and more brownish. Sides of breast, sides and flanks light brownish gray, the sides of the breast sometimes faintly spotted with a deeper shade, but frequently uniform; tibia grayish white in front, brown on posterior side; rest of lower parts pure white. In summer the colors paler; in fall and winter the brown above brighter, the buff of jugulum deeper, and spots darker. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.40	12.60	4.00	3.25	1.15	.60
Female . . .	7.15	12.00	3.80	3.05	1.12	.57

Iris brown; bill—upper and end of under dusky; rest pale flesh color; legs flesh color; feet and claws brown.

These birds occasionally visit the upland groves and gardens, but their true home is within the deep woods, on swampy grounds and moist lands bordering the sloughs and streams. Happy birds! in their deep, gloomy, solitary surroundings, that sing sweetly in the breeding season from early morn until late at eve; and so softly do some of the notes fall, the hearer must listen to catch its full, tender, soul-stirring melody, which, to my ear, rings out louder and clearer as the shades of night deepen. Their ordinary note is a sharp, liquid “Chirp,” uttered at times in a harsh, scolding manner.

The birds are rather shy, and on account of their retiring habits and unfrequented haunts, much more common throughout their range than they are generally supposed to be. Like the Wood Thrush, they live in the lower branches of the trees, and

search largely for their food (which is similar) upon the ground, the upturned roots and moss-covered bodies of fallen trees.

They build their nests either on the ground in hillocks of moss, under a clustering growth of plants, or in the forks of shrubs, when well concealed by low, overhanging bushes. They are composed of leaves, intermingled with soft strippings from vines and plants, stems of weeds, grasses, etc., and often lined with finer grasses, rootlets or horse hairs. Eggs four or five, .87x.65; greenish blue; they vary in size and somewhat in depth of color; and in rare instances a few faint reddish spots appear upon the larger end; in form, oval.

***Turdus aliciae* BAIRD.**

GRAY-CHEEKED THRUSH.

Migratory; not uncommon. Arrive the last of April to first of May; return and leave for the south in September.

B. 154. R. 3. C. 12. G. 3. 329. U. 757.

HABITAT. Eastern and northern North America; west to the Rocky Mountains, Alaska and eastern Siberia; breeding from Labrador westward to southern Alaska, and north to the Arctic coast; wintering south of the United States to Costa Rica.

SP. CHAR. Above, uniform greenish olive brown; no trace of light orbital ring. Beneath, white, usually more or less tinged with buff on the jugulum, the sides uniform olive gray. Jugulum with lower parts and sides of throat marked with rather small triangular spots of dusky. *Adult, in spring:* Above, uniform greenish olive brown, the tail and outer portion of wings sometimes appreciably browner, or less greenish; sides of head nearly uniform dull grayish, the auriculars faintly streaked with white. Malar region, and lower parts in general, white, the entire sides uniform olive gray, and the jugulum usually (but not always) more or less tinged with light buff; jugulum, with lower part and sides of throat, marked with rather small but very distinct deltoid spots of dusky, these markings more cuneate anteriorly, and forming a nearly continuous sub-malar stripe along each side of throat, the extreme posterior spots decidedly transverse; breast marked with transverse spots of olive gray, like the color of the sides. *Adult, in fall and winter:* Similar, but usually more greenish olive, and the buff tinge on jugulum more distinct. *Turdus aliciae* is apparently a very near ally of *T. fuscescens*, with which it agrees much more closely in measurements and in pattern of coloration than *T. ustulatus swainsonii*, with which it has usually been compared, and, by many, confused, though needlessly so. From the latter it may be invariably distinguished by the entire absence of a light orbital ring, the whole side of the head being nearly uniform grayish, as in *fuscescens*. The spots on the jugulum average decidedly smaller; the jugu-

lum and malar region are much less distinctly buff: the sides much grayer, etc. Some specimens of *alicia* and *swainsonii* are identical in the color of the upper parts, but a large majority of the former species are decidedly darker and less brown, appearing on actual comparison almost gray in contrast. (*Ridgway*.)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.60	12.60	4.15	3.15	1.20	.55
Female . . .	7.30	12.30	4.00	3.00	1.18	.53

Iris brown; bill dusky, with basal half of under yellowish; legs and feet flesh color, the feet a shade darker, with bottoms pale; claws brown.

This species frequents alike the woods and scattering trees and bushes fringing the streams. Shy, restless birds; and, as they prefer for their feeding grounds open spaces or forests free from underbrush, they are not easily approached. They are largely terrestrial in their habits, and spend much of their time hopping over the ground in search of food, standing almost erect when they stop to listen, or utter from the perch their low, whistling "Whew." I am wholly unacquainted with their breeding habits, and therefore take pleasure in quoting from Mr. E. W. Nelson's "Report upon Natural History Collections made in Alaska:"

"This species is common throughout all the northern portion of Alaska wherever willow and alder thickets afford it shelter. Its western range extends to Behring Straits and beyond, and it has been recorded from Kamtchatka, and probably occurs on the Chukchi Peninsula. Along the entire Yukon, and other streams bordered by trees and bushes in this region, it is present in great abundance during the breeding season. On the first of June, 1879, as I came down the Yukon by boat, large numbers of their old nests were seen in the leafless bushes along the river banks. A number of these nests were close to the ground—within two or three feet—while others were from eight to twelve feet high, at the division of two stout branches, where the compact structure of fine grass and leaves was placed. This species reaches the mouth of the Yukon and adjacent coast in large numbers the last of May or first of June. The earliest arrival which I have recorded is on May 24th. They are soon found in every thicket, whence their low, sweet song is frequently

heard; but they are very shy, and, at the first alarm, dive into the dense bushes for shelter. As soon as the breeding season is over they become less retiring, and frequent the vicinity of villages and more open spots, where many are killed by the native boys, armed with their bows and arrows. Their skins are removed and hung in rows or bunches to dry in the smoky huts, and are preserved as trophies of the young hunters' prowess. In the winter festivals, when the older hunters bring out the trophies of their skill, the boys proudly display the skins of these Thrushes and hang them alongside.

"On the seacoast every alder patch has a pair or more of these birds, and its presence at Sitka and Kadiak is attested by numerous specimens in the National Museum Collection. Dall records a nest obtained from an elevation of about six feet in a small alder. This nest was made of hair, lined with scraps of deer hair, feathers, and a little moss. A nest, obtained by me near St. Michael's, on the first of June, is an extremely small, loose structure, formed by lining a small depression at the base of a shrub in the midst of an alder thicket with fine, soft grass leaves. The material of the nest is uniform throughout, and in this particular partly bears out Dr. Brewer's statement in the 'History of North American Birds,' which is: 'The nests (of *aliciæ*) are also quite different in their appearance and style of structure. The *Hypnum* mosses, so marked a feature in the nests of *T. swainsonii*, as also in those of *T. ustulatus*, are wholly wanting in those of *T. alicie*.' This statement is not confirmed, however, by the examination of other nests. A second example, obtained at St. Michael's, on June 20th, was composed mainly of these mosses mixed with a small amount of coarse grass. This nest was placed upon the branching base of a small alder, only a few inches from the ground. The nest first mentioned measured three and a half inches across the top by two inches deep, and the eggs which it contained measure respectively: .93 x .62, .90 x .64 and .93 x .68. These eggs are blue, with a varying amount of reddish brown specking, which is most abundant at the larger end. In two specimens of this set the spots are thinly scattered over the shell, while in the

other two it is so distributed that over half the surface is concealed by it. Of the specimens in the National Museum Collection, some are scarcely marked at all, while in others the ground color is nearly hidden. The single egg found in the second nest measures .92 x .69. This nest measures three inches in depth by four inches in width, the central cavity being two inches deep."

***Turdus ustulatus swainsonii* (CAB.).**

OLIVE-BACKED THRUSH.

PLATE XXXV.

Migratory; common. Arrive about the first of May; begin to return early in September; a few remaining late in October.

B. 153. R. 4a. C. 13. G. 4, 330. U. 758a.

HABITAT. Eastern North America; north into the Arctic regions; west to and including the Rocky Mountains, and from the upper Columbia River northwest throughout the wooded lands of Alaska; breeding chiefly north of the United States; wintering from the Gulf States southward into northern South America.

SP. CHAR. *Adult:* Above, uniform olive brown, more grayish in some examples; a very distinct orbital ring of buff; supraloral stripe, malar region, chin, throat and jugulum light buff, usually deepest toward sides of head and neck; jugulum thickly marked with very broad triangular spots of dusky brown (much darker than the color of the crown), these markings more cuneate anteriorly, and continued along sides of throat in a series of longitudinal dashes, usually blended into a more or less continuous submalar stripe, narrower and unbroken anteriorly; chin and upper parts of throat immaculate; sides of breast, sides and flanks olivaceous gray; rest of lower parts pure white; breast marked with distinct transverse spots of deep brownish gray; tibia light brownish gray. Axillars and lining of wing deep grayish fulvous, mixed with ochraceous. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.40	12.15	4.00	3.00	1.12	.52
Female . . .	7.15	11.65	3.80	2.80	1.10	.50

Iris brown; bill dusky, with under pale straw color at base; legs pale brown; feet and claws a shade darker.

This species is more a bird of the woods than the Gray-cheeked Thrush,* which it so closely resembles in build, color,

*From the observations and collections made on the upper Yukon, the Olive-backed Thrush appears to be a common summer resident there, and thus extends its breeding range within the Arctic circle. It appears to be influenced to a great extent in its range by the presence or absence of woods, and its northern limit may be marked as coinciding with the tree limit. *Alaska*, on the contrary, extends beyond this, wherever a bunch of dwarf willows will give it shelter, to the very shores of the Arctic and Behring Seas. (*Nelson.*)

habits and actions, that one familiar with both is often in doubt as to the bird in the bush, and only feels certain when he has it in hand, or hears its call note or song. Doctor Brewer, in "North American Land Birds," says in regard to the latter:

"The *Turdus aliciae* comes a few days the earlier, and is often in full song when the *T. swainsonii* is silent. The song of the former is not only totally different from that of the latter, but also from that of all our other Wood Thrushes. It most resembles the song of *T. pallasi*, but differs in being its exact inverse, for whereas the latter begins with its lowest notes, and proceeds on an ascending scale, the former begins with its highest, and concludes with its lowest note. The song of *T. swainsonii*, on the other hand, exhibits much less variation in the scale, all the notes being of nearly the same altitude."

In the spring and early summer of 1880, I found these birds quite common, and breeding, in Nova Scotia and on Grand Manan Isle, New Brunswick. They were very shy, and as they made their homes largely in the thick growths of trees, I seldom caught a glimpse of one, and were it not for their exquisite song, and sharp call and alarm notes, "Whit, whit, whit," so often repeated, I should have thought them extremely rare. In migration, they frequent the more open woods, and are less wary.

Their nests are built in bushes, or small trees, ranging from two to eight feet from the ground. They are composed of leaves, moss, twigs, strippings from plants, etc., and sometimes lined with fine rootlets. Eggs usually four, .92 x .66; light greenish blue, spotted and occasionally blotched with pale reddish to dark brown and lilac, chiefly about the larger end; in form, oval. A set of four eggs, collected June 15th, at Grand Manan, from a nest in a small white birch, about six feet up, are, in dimensions: .92 x .67, .93 x .66, .94 x .68, .95 x .65.

***Turdus aonalaschkæ pallasi* (CAB.).**

HERMIT THRUSH.

PLATE XXXV.

Migratory; rare. I have never met with the birds in the middle or western part of the State. Arrive in March and

April; begin to return in September; remain into November, and may occasionally winter in southeastern part of the State.

B. 149. R. 5*b*. C. 10. G. 5, 331. U. 759*b*.

HABITAT. Eastern North America; west casually to the Great Plains (replaced westward by the Rocky Mountain variety, *T. aonalaschkæ audubonii*, which I feel confident will be found in the early spring and fall in western Kansas and western Nebraska); breeds from the northern United States northward, and winters in the Southern States.

SP. CHAR. Second primary shorter than fifth. Tail much more reddish than back. *Adult, in spring and early summer:* Above, uniform olive brown, changing to dull cinnamon rufous on the tail, the upper tail coverts of an intermediate tint; outer portion of the wings more rusty than back, but much less rufous than the tail. A very distinct orbital ring of pale buff; auriculars and suborbital region dull grayish brown, indistinctly streaked with paler. Lower parts dull white, purer on the abdomen, the jugulum usually faintly tinged with buff; jugulum marked with large deltoid spots of dark brown to blackish, the more posterior of these spots broader and less pointed, the anterior ones more cuneate; sides of the neck with cuneate streaks of dark brown or blackish, narrower and more linear anteriorly, where they form a well-defined stripe or "bridle" along each side of the throat; malar region dull white, indistinctly speckled or streaked with brown; breast with distinct roundish or somewhat sagittate spots of deep grayish brown; sides and flanks light grayish olive brown; axillars and lining of wing pale dull ochraceous; tibia olive brown. *Adult, in fall and winter:* Similar, but above much browner (almost umber on the back), the tail deeper rufous, the jugulum more distinctly tinged with buff, and the sides browner olive. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	7.20	11.50	3.70	3.00	1.20	.55
Female . . .	6.80	11.00	3.50	2.75	1.18	.52

Iris dark brown; bill—upper and ends of lower dusky; rest straw color; legs, feet and claws light brownish flesh color.

These birds frequent the moist woodlands, timbered streams and swampy growths, where I have often met with them in their winter quarters and summer homes. They are not naturally timid or suspicious birds, and in fall and winter they have come about my camp and scratched among the leaves for food, regardless of my presence; but during the breeding season they are wary, and keep well hidden in the gloomy forests of spruce, fir and hemlock, making their presence known, however, by their loud "Chuck," note, and the woods ring with their clear,

liquid, silvery song, that at times is uttered low and soft, but always in a charming, musical flow. It sounds much like the golden song of the Wood Thrush, but on a little higher key, and with less compass of voice. Like all the Wood Thrushes, they live largely in the lower branches of the trees and on the ground, and their food habits and actions are similar.

Their nests are built in a depression in the ground, and well concealed beneath bushes or hidden among the forest plants. They are quite bulky, and composed of weeds, grasses and moss, and lined with a finer material of the same, and often with rootlets. Eggs usually four, .86 x .65; greenish blue; in form, elongate oval. A set of four eggs, collected May 26, 1880, near Digby, Nova Scotia, from a nest sunk in the ground among ferns, the rim barely coming to the surface, are, in dimensions: .85 x .66, .86 x .65, .86 x .65, .87 x .65.

GENUS *MERULA* LEACH.

Tail about four-fifths as long as the wing, and more than three times as long as the tarsus; slightly rounded. Tarsus a little longer than the commissure, exceeding middle toe and claw by less than the length of the latter. Third, fourth and fifth quills longest, the second about equal to the sixth, never much longer or shorter; third to sixth quills with outer webs sinuated. Outstretched feet not reaching beyond the middle of the tail. Plumage variable, but never distinctly spotted beneath, except in young. Sexes sometimes very different in plumage. (*Ridgway*.)

Merula migratoria (LINN.).

AMERICAN ROBIN.

PLATE XXXV.

Resident; abundant in the eastern part of the State in summer, and along the streams in winter, where the hackberries are plenty; rare at other times; not common in the western portion of the State. Begin laying the last of April.

B. 155. R. 7. C. 1. G. 6, 332. U. 761.

HABITAT. Northern and eastern North America (replaced in the western United States, east to the edge of the Great Plains, by *M. migratoria propinqua*); south into eastern Mexico; breeding from near the southern borders of the United States northward to the Arctic coast.

SP. CHAR. *Adult male, in summer:* Head deep black, with the lower eyelid, part of the upper eyelid, and a supraloral streak, pure white; chin pure white, the throat streaked with the same. Upper parts grayish slate color, the scapulars and interscapulars showing darker centers, these usually most conspicuous anteriorly; wing coverts also darker centrally, but this mostly concealed; primaries, primary coverts and alula black, narrowly but distinctly edged with ash gray. Tail uniform slate black, the two outer feathers with inner webs distinctly tipped with white. Jugulum, breast, entire sides, upper part of abdomen, axillars and lining of the wing, uniform deep rufous or reddish ochraceous (varying in shade in different individuals); posterior part of abdomen and femoral region pure white; anal region and crissum white, mixed with plumbeous, this mostly beneath the surface. *Adult female, in summer:* Usually a little paler and duller in color than the male, but not always distinguishable. Bill less purely yellow; dimensions about the same. *Adult, in winter:* Upper parts decidedly tinged with olive; rufous feathers of the lower parts distinctly bordered with white, producing a scaly appearance. Bill mostly blackish, the yellow confined chiefly to the lower mandible. *Young, in first winter:* Differing from the autumnal or winter adult in much paler colors; head grayish, the pileum scarcely or not at all darker than the back, the upper parts being uniform dull gray; breast, etc., reddish ochraceous, much mixed with white posteriorly; the jugulum tinged with ashy. A more or less distinct supra-auricular streak of white. *Young, in first plumage:* Pileum and side of head dull blackish, with an indistinct dull whitish superciliary streak between; the lower eyelid also whitish. Upper parts dull brownish gray, the scapulars and interscapulars variegated with blackish terminal bars and whitish shaft streaks; lesser and middle wing coverts also marked with pale shaft streaks. A whitish malar stripe, bordered below by a blackish stripe along each side of throat; chin and throat white, immaculate, or with only very faint scattered specks. Breast and sides of abdomen pale rufous or ochraceous, thickly spotted with black; lining of wings uniform ochraceous or pale rufous; posterior lower parts chiefly whitish. (*Ridgway.*)

	Length.	Stretch of wing.	Wing.	Tail.	Tarsus.	Bill.
Male	10.50	16.20	5.25	4.30	1.35	.87
Female . . .	9.85	15.95	5.15	4.15	1.33	.85

In a few specimens the females were fully as large as the males.

Iris brown; bill bright yellow, tipped with dusky (the bill of the female somewhat paler; in young birds the upper mandible, with the exception of the edges, dark brown); legs brown; feet dark brown; claws blackish.

These familiar birds of the orchard and garden brave the coldest weather, and their distribution in winter depends largely upon the food supply. In the winter of 1880, I found a few wintering on Brier Island, Nova Scotia. They sought shelter

at night and during severe storms in the thick growths of spruce and other shrubby trees,* and subsist upon the snails and minute forms of life that abound in the kelp and other debris washed upon the shore. Their winter fare inland consists largely of cedar berries, hackberries, wild grapes, etc., and in the fall help themselves to our cultivated berries; but they more than repay the loss in the destruction of cut worms, canker worms and various forms of injurious insect life, which they diligently search for in the gardens, plowed fields and bare spots, in the early spring, ready to catch them as fast as they are warmed into life in their winter beds by the hot rays of the sun and venture to the surface. Then they are the first of the family to greet us with their song: not as varied and musical as the silvery songs of their cousins of the deep woods, but full of tender pathos, and awaken us to the fact that winter is over and summer at hand.

Their nests are built in the crotches of trees, saddled on to horizontal branches or placed in hedges, outbuildings—in fact, most anywhere off the ground. They are coarsely constructed of leaves, stems, twigs and grasses, fastened together and plastered inside with mud, and lined with fine stems and rootlets. Eggs three to five (usually four), 1.16 x .80; greenish blue; in form, oval.

***Merula migratoria propinqua* RIDGW.**

WESTERN ROBIN.

PLATE XXXV.

An occasional visitant in the western part of the State. (May breed there.)

B. —. R. 7a. C. 2. G. 7, 333. U. 761a.

HABITAT. Western United States; north to British Columbia; east to the eastern edge of the Great Plains; south over the table lands of Mexico.

SP. CHAR. Very similar to *T. migratoria*. Differ as follows: Outer tail feathers without distinct white tip (often with no white at all); anterior portion of back slaty gray, abruptly defined against black of hind neck. Average a little larger. (*Ridgway*.)

*These birds usually have roosting places in the deep, moist or swampy woods, where they assemble at night, like the Crows, in large flocks. For full description of this habit, see "Brewster on Robin Roosts," in "The Auk," Vol. 7, p. 360.

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	10.45	16.35	5.35	4.40	1.35	.90
Female . . .	10.15	16.10	5.25	4.25	1.35	.87

Iris brown; bill yellow, with tips and often the ridge dusky; young birds show less yellow, and the upper mandible is usually all dusky, except the edges and a little on basal sides; legs brown; feet and claws dark brown.

The general habits, actions, nesting and eggs of this western form are like those of the eastern species. Eggs: 1.17x.81.

GENUS **SIALIA** SWAINSON.

“Bill short, stout, broader than high at base, then compressed; slightly notched at tip. Rictus with short bristles. Tarsi not longer than middle toe; claws considerably curved. Wings much longer than tail; the first primary spurious, not one-fourth the longest. Tail moderate; slightly forked. Eggs plain blue. Nest in holes. The species of this genus are all well marked, and adult males are easily distinguishable. In all, blue forms a prominent feature. Three well-marked species are known, with a fourth less distinct. The females are duller in color than the males. The young are spotted and streaked with white.”

Sialia sialis (LINN.).

BLUEBIRD.

PLATE XXXV.

An abundant resident in the eastern part of the State; common to the middle; retiring in winter to the thickets in the deep ravines and along the streams; a rare summer resident in the western portion of the State. Begin laying the last of April.

B. 158. R. 22. C. 27. G. 10, 334. U. 766.

HABITAT. Eastern United States; north to Nova Scotia, Ontario and Manitoba; west to the base of the Rocky Mountains; breeding throughout their range; wintering from the Middle States southward to Cuba.

SP. CHAR. Breast and sides cinnamon or chestnut. Throat cinnamon, like breast; belly white. Breast, etc., deep cinnamon or cinnamon rufous; sides of neck and malar region blue. *Adult male:* Above, rich cobalt blue (rarely varying to ultramarine, more rarely still to cerulean). In winter the blue is duller, the cinnamon of breast, etc., deeper and more purplish, and feathers of back, etc., bordered with rusty. *Adult female:* Above, dull grayish, the wings dull blue, the rump, upper tail coverts and tail brighter blue; a whitish orbital ring; breast, etc., light dull cinnamon, the throat paler, with a dusky streak along

each side; an indistinct whitish malar stripe. *Young:* Above, dark brownish or grayish, with conspicuous tear-shaped streaks of whitish over whole back, scapulars, etc.; wings (except coverts) and tail as in adult; beneath, white, the feathers of breast, etc., very broadly bordered with dark grayish or brownish; a whitish orbital ring. (*Ridgway.*)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	6.80	12.40	4.00	2.75	.78	.47
Female . . .	6.60	12.00	3.85	2.60	.76	.46

Iris brown; bill, legs, feet and claws blackish.

The habits of this well-known species are so familiar to all that no description is needed. I cannot, however, refrain from presenting the following, written by Wilson Flagg, in so happy and pleasing a style:

“Not one of our songsters is so intimately associated with the early spring as the Bluebird. Upon his arrival from his winter residence, he never fails to make known his presence by a few melodious notes uttered from some roof or fence in the field or garden. On the earliest morning in April, when we first open our windows to welcome the soft vernal gales, they bear on their wings the sweet strains of the Bluebird. These few notes are associated with all the happy scenes and incidents that attend the opening of the year.

“The Bluebird is said to bear a strong resemblance to the English Robin-Redbreast, similar in form and style, having a red breast and short tail feathers, with only this manifest difference: that one is olive colored above where the other is blue. But the Bluebird does not equal the Redbreast as a songster. His notes are few and not greatly varied, though sweetly and plaintively modulated, and never loud. On account of their want of variety, they do not enchain the listener; but they constitute an important part of the melody of morn.

“The value of the inferior singers in making up a general chorus is not sufficiently appreciated. In musical composition, as in an anthem or oratorio, though there is a leading part, which is usually the air, that gives character to the whole, yet this leading part would often be a very indifferent piece of melody if performed without its accompaniments; and these alone would seem still more trifling and unimportant. Yet, if the composi-

tion be the work of a master, these brief strains and snatches, though apparently insignificant, are intimately connected with the harmony of the piece, and could not be omitted without a serious disparagement of the grand effect. The inferior singing birds, bearing a similar relation to the whole choir, are indispensable as aids in giving additional effect to the note of the chief singers.

“Though the Robin is the principal musician in the general anthem of morn, his notes would become tiresome if heard without accompaniments. Nature has so arranged the harmony of this chorus, that one part shall assist another; and so exquisitely has she combined all the different voices, that the silence of any one cannot fail to be immediately perceived. The low, mellow warble of the Bluebird seems an echo to the louder voice of the Robin; and the incessant trilling or running accompaniment of the Hairbird, the twittering of the Swallow, and the loud, melodious piping of the Oriole, frequent and short, are sounded like the different parts in a band of instruments, and each performer seems to time his part as if by some rule of harmony. Any discordant sound that may occur in the performance never fails to disturb the equanimity of the singers, and some minutes will elapse before they resume their song. It would be difficult to draw a correct comparison between the birds and the various instruments they represent. But if the Robin was described as the clarionet, the Bluebird might be considered the flageolet, frequently, but not incessantly, interspersing a few mellow strains. The Hairbird would be the octave flute, constantly trilling on a high key, and the Golden Robin the bugle, often repeating his loud and brief strain. The analogy, if carried farther, might lose force and correctness.

“All the notes of the Bluebird—his call notes, his notes of complaint, his chirp, and his song—are equally plaintive and closely resemble one another. I am not aware that this bird utters a harsh note. His voice, which is one of the earliest to be heard in the spring, is associated with the early flowers and with all pleasant vernal influences. When he first arrives he perches upon the roof of a barn or upon some leafless tree, and

delivers his few and frequent notes with evident fervor, as if conscious of the pleasures that await him. These mellow notes are all the sounds he makes for several weeks, seldom chirping or scolding like other birds. His song is discontinued at mid-summer, but his plaintive call, consisting of a single note pensively modulated, continues every day until he leaves our fields. This sound is one of the melodies of summer's decline, and reminds us, like the note of the green nocturnal tree-hopper, of the ripened harvest, the fall of the leaf, and of all the joyous festivals and melancholy reminiscences of autumn.

"The Bluebird builds his nest in hollow trees and posts, and may be encouraged to breed around our dwellings by supplying boxes for his accommodation. In whatever vicinity we reside, whether in a recent clearing or in the heart of a village, if we set up a bird house in May, it will certainly be occupied by a Bluebird, unless previously taken by a Wren or a Martin. But there is commonly so great a demand for such accommodations, that it is not unusual to see two or three different species contending for one box."

Their nests are loosely but rather smoothly constructed of fine straws, grasses, and occasionally leaves, hair and feathers. Eggs usually four or five, .83x.63; light greenish blue; in form, oval. Pure white sets have occasionally been taken.

***Sialia arctica* (SWAINS.).**

MOUNTAIN BLUEBIRD.

PLATE XXXV.

A common winter sojourner in the western part of the State; rare in the eastern portion. Begin to arrive the last of September; leave in March and April.

B. 160. R. 24. C. 29. G. 11, 335. U. 768.

HABITAT. Western North America; north to Great Slave Lake; east into Dakota and Texas; south into Mexico; breeds in the Rocky Mountain region.

SP. CHAR. Breast, etc., fine greenish blue (in adult male), or brownish gray or grayish brown (in female), the belly and under tail coverts pure white. *Adult male:* Above, rich, glossy cerulean blue, the wings and tail more azure, or cobalt; beneath, lighter cerulean blue, the belly and under tail coverts white. (In win-

ter, the blue of the head, neck, back and breast obscured by grayish brown tips to the feathers.) *Adult female*: Above, brownish gray, the primaries dull light blue, the rump, upper tail coverts and tail, bright or greenish blue; beneath, light grayish brown, the belly and under tail coverts white; a whitish orbital ring. (In winter, colors deeper, especially on lower parts.) *Young*: Quills and tail feathers as in adults; above, grayish brown, the back usually streaked with white; beneath, grayish white, the breast and sides mottled with grayish brown. (*Ridgway*.)

	<i>Length.</i>	<i>Stretch of wing.</i>	<i>Wing.</i>	<i>Tail.</i>	<i>Tarsus.</i>	<i>Bill.</i>
Male	7.15	13.50	4.50	3.00	.85	.52
Female	6.90	13.00	4.30	2.80	.85	.50

Iris brown; bill, legs, feet and claws blackish.

These birds of the central regions are very similar in habits to our common Bluebird, but more wary and silent. Even their love song is less loud and musical. A rather feeble, plaintive, monotonous warble, and their chirp and twittering notes are weak. They subsist upon the cedar berries, seeds of plants, grasshoppers, beetles, etc., which they pick up largely upon the ground, and occasionally scratch for, among the leaves. During the fall and winter, they visit the plains and valleys, and are usually met with in small flocks, until the mating season. They are great lovers and attentive parents.

I have found them nesting in New Mexico and Colorado, from the foothills to near timber line, usually in deserted Woodpecker holes, natural cavities in trees, fissures in the sides of steep, rocky cliffs, and, in the settlements, in suitable locations about and in the adobe buildings. Their nests are lined with fine grasses, or most any suitable material at hand. In localities where sheep are raised, wool is freely used. Eggs usually four or five, .85 x .65; pale greenish blue; in form, oval.

ADDITIONS

To the list of birds since the publication of my "Revised Catalogue of the Birds of Kansas:"

- Æchmophorus occidentalis* (LAWR.). Western Grebe.
Oidemia perspicillata (LINN.). Surf Scoter.
Chen caerulescens (LINN.). Blue Goose.
Grus canadensis (LINN.). Little Brown Crane.
Ægialitis meloda circumcincta RIDGW. Belted Piping Plover.
Ægialitis nivosa CASS. Snowy Plover.
Colinus virginianus texanus (LAWR.). Texan Bob-white.
Phalaenoptilus nuttalli nitidus BREWST. Frosted Poor-will.
Picicorvus columbianus (WILS.). Clark's Nutcracker.
Spizella monticola ochracea BREWST. Western Tree Sparrow.

ELIMINATIONS.

- Centrocercus urophasianus* (BONAP.). Sage Grouse.
Otocoris alpestris (LINN.). Horned Lark.

ENGLISH SPARROW.

EUROPEAN SPARROW—*Passer domesticus* (Linn.). LEACH.

These hardy, aggressive little foreigners (unfortunately introduced) cannot properly be classed with our native birds, but as they are here to stay, are entitled to mention.*

GENUS **PASSER** BRISSON.

Form stout and stocky. Bill very stout, shaped somewhat as in *Corpodacus*, but without nasal ruff. Culmen curved; commissure little angulated; gonys convex, ascending; lateral outlines of bill bulging to near the end. Wings pointed; first, second and third primaries nearly equal and longest; fourth little shorter, rest graduated; inner secondaries not elongate. Tail shorter than wings, nearly even; feet small; tarsus about equal to middle toe and claw; lateral toes of equal lengths, their claws not reaching to base of middle claw. Sexes alike. Male with black and chestnut on head. Middle of back only streaked. Old World; two species naturalized in North America (*domesticus* and *montanus*).

The Sparrow—Philip Sparrow—House Sparrow—parasite—tramp—hoodlum—gamin. *Male adult*: Upper parts ashy gray; middle of back and scapulars boldly streaked with black and bay. A dark chestnut or mahogany space behind eye, spreading on side of neck. Lesser wing coverts deep chestnut; median tipped with white, forming a conspicuous wing bar, bordering which is a black line. Greater coverts and inner quills with central black field bordered with bay. Tail dusky gray, unmarked. Lower parts ashy, gray or whitish; chin and throat jet black, spreading on the breast and lores, bordered on side of neck with white. Bill blue black; feet brown. Wing about 3.00; tail 2.25. *Female adult*: Above, brownish gray; streaking of back light ochery brown and black; wing edgings light ochery brown, the white bar impure. No black, mahogany or white on head; a pale brown postocular stripe; bill blackish brown, yellowish at base below. Varies endlessly in the purity or dinginess of coloration. *Young male*: At first like female. Europe, etc. (*Coues*).

Their nests are placed in any available nook about houses, cavities in shade trees, etc. They are rather bulky, and loosely constructed of hay, straw, wool, or most any material at hand, and lined with feathers. Eggs four to seven, .86 x .62; dull light gray or grayish white, speckled and dashed with dusky brown and purplish gray. They vary somewhat in marking, depth of color, form and size.

*For report of the committee appointed by the American Ornithologists' Union, to investigate the eligibility or ineligibility of the European House Sparrow, see my "Revised Catalogue of the Birds of Kansas."

GLOSSARY.

A.

ABDOMEN, *n.* The belly.

ABDOMINAL, *a.* Pertaining to the abdomen.

ABERRANT, *a.* Deviating from the usual or normal character.

ABORTIVE, *a.* Imperfectly developed.

ACCIPITRES, *n.* Plural of *accipiter*; also the name of a more or less artificial group of birds, including the so-called "Birds of Prey," or *Raptores* of some authors.

ACCIPITRINE, *a.* Hawk-like.

ACICULAR, *a.* Needle shaped.

ACULEATE, *a.* Slender pointed.

ACUMINATE, *a.* Tapering gradually to a point.

ACUTE, *a.* Sharp pointed.

ADOLESCENCE, *n.* Youth.

ADULT, *n.* As applied to birds, an individual which has attained the final or mature plumage.

ADULT, *a.* In ornithology, having reached the fully-mature or final plumage. (A bird may be adult as regards organization without being of adult plumage.)

ÆSTIVAL, *a.* Pertaining to summer.

AGGREGATED, *a.* Collected together; accumulated. Thus, by aggregation, a number of individual spots or other markings may form, collectively, a larger patch or stripe.

AFTERSHAFT, *n.* Properly, the stem of the supplementary plume springing from near the base of some feathers; ordinarily, however, applied to the plume itself.

ALAR, *a.* Pertaining to the wing.

ALAUDINE, *a.* Lark-like.

ALBINISM, *n.* An abnormal condition of plumage, with white replacing the ordinary colors to a greater or less extent. Albinism results from a deficiency or entire absence of pigment in the skin which supplies the coloring of the feathers, and is complete only when all colors are obliterated from the plumage. (In birds, complete albinism of the plumage is not necessarily accompanied by change of colors of the bill, feet and eyes.)

ALBINO, *n.* An animal affected with albinism.

ALBINISTIC, } *a.* Affected with albin-
ALBINOTIC, } ism.

ALECTROID, *a.* Cock-like; resembling the domestic cock.

ALECTORINE, *a.* Pertaining to the domestic cock.

ALIFORM, *a.* Wing-like.

ALPINE, *a.* Pertaining to the Alps. (Often used in relation to any high mountain range for species inhabiting high altitudes, which are termed "Alpine" species.)

ALTRICES, *n.* Birds whose young are reared in the nest and fed by the parents. With the exception of the *Raptores*, some of the *Steganopodes* and *Pygopodes*, the *Longipennes* and *Sphenisci*, young of *Altrices* are psilopædic, born naked or partially clad.

ALTRICIAL, *a.* Having the character of or pertaining to the *Altrices*.

ALULA, *n.* The "bastard wing," composed of several stiff feathers growing on the so-called thumb. They are directly below the secondary or greater coverts, and collectively resemble a miniature wing, whence the name.

ALULAR, a. Pertaining to the alula.
AMBULATORY, a. Gradient; walking or running. (Opposite of *saltatory*, hopping or leaping.)
ANAL, a. Pertaining to the anus.
ANAL REGION, n. The feathers immediately surrounding the anus.
ANATINE, a. Duck-like.
ANCIPTAL, a. Two edged; double edged.
ANGLE OF CHIN, n. The anterior point of the space between the rami of the lower jaw.
ANISODACTYLÆ, n. The name of a group of birds having three toes in front and one behind.
ANISODACTYLOUS, a. Having three toes in front and one behind.
ANISOPOGONOUS, a. Said of a feather when the two webs are of unequal breadth.
ANOTINE, n. A bird one year or less old, or which has moulted but once. (Little used.)
ANNULAR, a. Ringed.
ANOMALOUS, a. Very unusual; strange; abnormal.
ANSERINE, a. Goose-like.
ANTE (in composition). Anterior to, or before; as, *anteorbital*, *anteocular*, etc.
ANTHINE, a. Pipit-like.
ANTROSE, a. Directed forward, as the nasal tufts of most Jays and Crows, and the rictal bristles of many birds.
APEX, n. The tip or point of anything.
AQUATIC, a. Pertaining to the water. *Aquatic birds* are those which derive their subsistence chiefly from seas, lakes or rivers, and include two artificial groups, known as "Waders" and "Swimmers."
AQUILINE, a. Eagle-like.
ARBOREAL, } a. Tree inhabiting.
ARBORICOLE, }
ARCUATE, a. Bow shaped; arched.
AREOLE, n. The small naked spaces between the scales of the feet, usually called *interspaces*.
ARIETIFORM, a. Having the form of the zodiacal sign, *Aries*.
ARMILLA, n. A colored ring round the lower end of the tibia; an anklet.
ARTICULATION, n. A joint or hinge. (Usually applied to the limbs.)
ASYMMETRICAL, a. Without symmetry, or without close resemblance between corresponding parts, as opposite sides. (The pattern of coloration in partial albinos is often asymmetrical.)

ASYMMETRY, n. Disproportion, or want of close resemblance, between corresponding parts or organs. (Very decided asymmetry of opposite sides of skull is observable in some Owls.)
ATROPHY, n. The wasting away, or obliteration of an organ or part, through deficient nutrition.
ATTENUATE, a. Tapering or growing gradually narrower toward the extremity, but not necessarily pointed, which would be *acuminate*.
AURICULAR, a. Pertaining to the ear.
AURICULARS, n. The (usually) well-defined feathered area which conceals the ears in birds.
AUTOPTICAL, a. Personally inspected.
AUTUMNAL PLUMAGE, n. The full dress of autumn. In most birds it remains essentially unchanged till the spring moult. In many species the young possess a peculiar autumnal plumage (assumed by their first moult) which differs not only from their first livery, but also from that of adults at the same season. In such, the adult or mature plumage may be completely assumed at the next moult, or it may be gradually acquired by successive moults, as in the case of many Orioles, Tanagers, and other bright-colored Passerine groups.

AVIAN FAUNA, } n. The bird life of a
AVI-FAUNA, } particular country
or locality.

AXILLA, n. The armpit.

AXILLAR, } a. Pertaining to the arm-
AXILLARY, } pit.

AXILLARIES, } n. A more or less distinct
AXILLARS, } tuft of graduated, usually soft and elongated feathers, growing from armpit.

B.

BACK, n. In descriptive ornithology, usually includes the scapulars and interscapulars, but should properly be restricted to the latter alone.

BAND, n. A broad transverse mark, with regular and nearly parallel edges; a broad bar of color. (A broad band is usually called a zone.)

BANDED, a. Marked with bands.

BAR, n. A narrow transverse mark of color.

BARB, n. Any one of the fibrillæ, or laminae, composing the web of feathers.

BARBED, a. Furnished with barbs; bearded.

BARBULE, n. A barb of a barb.

BARRED, a. Marked with bars.

BASE, n. Root; origin.

BASAL, a. Pertaining to the base.

BELLY, n. The central posterior portion of the under surface of the body; bounded laterally by the sides, posteriorly by the vent or anal region, and anteriorly by the breast.

BELT, n. A broad band of color across the breast or belly. (Distinguished from *zone* in that the latter may cross the wings or tail.)

BELTED, a. Marked with a broad band of color across the lower part of body.

BEND OF THE WING, n. The angle or prominence at the carpus or wrist joint in the folded wing.

BEVY, n. A flock of Quails or Partridges.

BIBLIOGRAPHY, n. Condensed history of the literature of a subject.

BIFURCATE, a. Doubly forked.

BINOMIAL, BINOMINAL, { *a.* Two-named, or, more properly, named by two terms. The *binomial system of nomenclature*, instituted in 1758 by Linnæus, and adopted by zoölogists and botanists, promulgates the use of two terms as the name of each species—the first generic, the second specific.

BIOLOGY, n. The study of living beings with relation to the laws and results of their organization.

BIOLOGICAL, a. Pertaining to biology. Biological science embraces the study of all organic creations, and thus includes zoölogy and botany, both recent and fossil.

BOAT SHAPED, a. A *boat-shaped tail* has the opposite sides or halves meeting below along the median line, the outer edges being elevated. The tail of *Quiscalus* is a familiar example, while that of the domestic fowl (*Gallus bankiva*) exemplifies the opposite form, with the edges below the middle feathers forming the *ridge* instead of the keel. A *boat-shaped bill* is one in which the maxilla resembles an inverted boat, as in genus *Cancroma*.

BOOT, n. In birds, the tarsal envelope, when entire.

BOOTED, a. A booted tarsus has the usual scales fused so as to form a continuous or uninterrupted covering. The tarsus of the smaller Thrushes and the American Robin well illustrates this character.

BOSS, n. A knob or short, rounded protuberance.

BRACCATE, a. Having the feathers on the outer side of the tibia elongated or plume-like, as in most of the *Falconidae*.

BRACE SHAPED, n. Shaped like the brace of printers.

BRACHIAL, a. Pertaining to the wing. (Little used.)

BRACHYPTEROUS, a. Short winged.

BRACHYUROUS, a. Short tailed.

BREAST, n. In birds, an artificial and somewhat arbitrary subdivision of the under surface, lying between the jugulum and abdomen. Its position corresponds nearly with that of the underlying pectoral muscles.

BREVIPENNES, n. The systematic name of a group of short-winged birds, including the Ostriches and kindred forms.

BREVIPENNINE, a. Short feathered; short winged (improperly so used); pertaining to the *Brevipennes*.

BRIDLE, n. A stripe of color extending back from the bill, along the lower sides of the head.

BRIDLED, a. Marked with a distinct stripe of color from the bill backward, beneath the eye, along the lower jaw or sides of the throat.

BRISTLE, n. A small, hair-like feather, consisting chiefly of the shaft; commonly developed near the angle of the mouth or rictus, but sometimes on other portions of the plumage also.

BUCCAL, a. Pertaining to the cheeks.

BULLATE, a. Having a blistered appearance.

C.

CADUCOUS, a. Falling off early.

CALCAREOUS, a. Chalky.

CANALICULATED, a. Channeled or furrowed.

CANCELLED, a. Latticed; marked both longitudinally and transversely.

CANDESCENT, } a. Whitish; hoary;

CANESCENT, } frost-like.

CAPILLARY, a. Hair-like.

CAPISTRATE, a. Hooded or cowlled.

CAPISTRUM, n. A hood or cowl. In descriptive ornithology, the fore part of the head all around, or that portion immediately surrounding the base of the bill.

CAPITAL, a. Pertaining to the head.

CAPITATE, a. A capitate feather has the end enlarged.

CAPUT, n. The head.

CARINA, n. A keel or median ridge.

CARINATE, a. Keeled, or with a median ridge. *Carcinate* birds (*Aves carinatus*) are those furnished with a keeled sternum.

CARNEOUS, a. Fleishy.

CARNIVEROUS, a. Fleish eating.

CARPAL, a. Pertaining to the wrist or carpus.

CARPAL JOINT, CARPAL ANGLE, { *a.* The prominence formed by the wrist joint, or carpus, when the wing is closed. The length of the wing, in descriptions, is measured from the carpal angle of the tip of the longest quill. (Same as bend of the wing, or *flexura*.)

CARPO-METACARPAL JOINT, n. The last wing joint, covered exteriorly by the alula.

CARPUS, n. The wrist. In a bird the space between the bend (*flexura*) and the hand joint of the wing.

CARUNCLE, n. A naked fleshy excrescence, usually about the head or neck, and ordinarily brightly colored, wrinkled or warty.

CARUNCULATE, { *a.* Having
CARUNCULATED, { caruncles.

CAUDAL, a. Pertaining to the tail.

CAUDA, n. The tail.

CAUDATE, a. Tailed.

CEPHALIC, a. Pertaining to the head.

CERACEOUS, a. Wax-like.

CERE, n. The naked skin or membrane in which the nostrils are situated, common to most birds of prey (*Raptores*), and many of the Parrot tribe, as well as to the Pigeons and some other groups. It usually has a more or less distinct line of demarkation anteriorly, except in the Pigeons.

CERVICAL, a. Pertaining to the cervix or hind neck.

CERVIX, n. The hind neck, extending from the occiput to the commencement of the back. It has two subdivisions, namely, the nape and scruff (*nucha* and *auchenium*), which occupy respectively the upper and lower halves of the cervix.

CHEEK, n. An arbitrary subdivision of the side of the head, differently employed by various writers, but usually corresponding to the *malar region* or feathered portion of the lower jaw.

CHIN, n. The extreme anterior point of the gular region, or the space between the lateral branches (*rami*) of the lower jaw.

CICONINE, a. Stork-like.

CILIUM, n. An eyelash.

CIRCUM (in composition). Around, encircling; as, *circumorbital* (around the eye), *circumventral* (around the vent), etc.

CIRRHIOUS, a. Tufted.

CLAW, n. The horny, pointed and compressed sheath of the terminal phalanx of the toe.

CLUTCH, n. A nest complement or "set" of eggs.

COCCYGES, n. The systematic name of a natural group of zygodactyle birds, including the Cuckoos, Plaintain-eaters, Turacous, Trogons, etc.

COLLAR, n. A ring of color encircling the neck.

COLLARED, a. Marked with a neck ring of different color from surrounding parts.

COLLUM, n. The neck.

COLORÉD, a. In ornithology, different from white. Thus, the colored phase of dichromatic species is that in which the plumage is other than white.

COMB, n. An erect, fleshy, longitudinal caruncle on the top of the head, as in the domestic fowl (*Gallus ferrugineus* var.) and the adult male Condor.

COMMISSURAL, a. Pertaining to the commissure.

COMMISSURE, n. The outlines of the closed mouth, or the opposed edges of the mandible and maxilla.

CONGENER, n. A species belonging to the same genus with another.

CONGENERIC, a. Belonging to the same genus with another.

CONIROSTRES, n. An arbitrary group of birds, in classifications, of which the Sparrow tribe (*Fringillidæ*) are typical.

CONIROSTRAL, *a.* Having a conical bill, like that of a Finch or Sparrow; pertaining to the so-called *Conirostres*.

CONTOUR FEATHERS, *n.* The surface feathers of the head, neck and body.

CORDATE, } *a.* Heart-shaped.
CORDIFORM, }

CORIACEOUS, *a.* Of leathery texture.

CORNEOUS, *a.* Horny.

CORNICULATE, *a.* Furnished with a small horn.

CORNIPLUME, *n.* A horn-like tuft of feathers on the head.

CORONATE, *a.* Crowned; having the top of the head ornamented by lengthened or otherwise distinguished feathers.

CORRUGATE, } *a.* Wrinkled.
CORRUGATED, }

COVEY, *n.* A family (or brood with or without their parents) of Quails or other game birds.

CRENATE, } *a.* Having round teeth.
CRENATED, }

CRENULATE, *a.* Finely crenate.

CREPUSCULAR, *a.* Pertaining to twilight. (Crepuscular birds are those which become active after sunset.)

CRISNUM, *n.* A term usually applied to the lower tail coverts collectively, but properly belonging to the feathers situated between the lower tail coverts and the anal region.

CRISNAL, *a.* Pertaining to the crissum.

CROWN, *n.* Properly the vertex, or that portion of the top of the head between the forehead and the occiput.

CRUCIATE, } *a.* Cross-like.
CRUCIFORM, }

CRURAL, *a.* Pertaining to the crus or tibia.

CRUS, *n.* The "thigh" or tibia.

CUBITAL, *a.* Pertaining to the forearm.

CUCULLATE, *a.* Hooded, or having the head colored differently from the rest of the plumage.

CULMEN, *n.* The ridge or upper outline of the maxilla or upper mandible.

CULMINAL, *a.* Pertaining to the culmen.

CULTRATE, *a.* Knife-like.

CULTRIROSTRES, *n.* An artificial group of wading birds, including the Herons and Storks, so named on account of the knife-shaped bill, and in this sense nearly equivalent to *Herodiones*. Also applied to a group of Passerine birds (?) which includes the *Corvidæ*, *Sturnidæ*, *Icteridæ*, etc.

CULTRIROSTRAL, *a.* Having a knife-shaped bill, or the bill lengthened, compressed, and pointed like a Heron's; pertaining to the so-called *Cultrirostres*.

CUNEATE, } *a.* Wedge shaped.
CUNEIFORM, }

CUPREOUS, *a.* Coppery; like copper.

CURSORES, *n.* An artificial group of birds in the older systems, including the Bustards and other "coursers" or "runners."

CURSorial, *a.* Running; pertaining to the *Cursores*.

CUSPIDATE, *a.* Stiff pointed.

CUTANEOUS, *a.* Pertaining to the skin. (Same as *dermal*.)

CYLINDRICOVATE, *n.* An elongate ovate with parallel sides.

CYMBIFORM, *a.* Boat shaped.

CYPSELIN, *a.* Swift-like; pertaining to the *Cypselidæ* or Swifts.

D.

DASYPÆDIC, *a.* Clothed with down at birth. (Same as *Ptilopædic*.)

DECIDUOUS, *a.* Temporary or shed periodically, as the horns of the deer, and the "nuptial ornaments" of many birds.

DECLINATE, } *a.* Bent downward.
DECLINED, }

DECOMPOSED, *a.* Said of a feather when the barbs are separated, not forming a continuous or compact web.

DECUMBENT, *a.* Hanging downward; drooping.

DECUSSATE, *a.* Crossed; intersected.

DELTOID, *a.* Triangular, or shaped like the Greek character "Delta" (Δ).

DENTATE, *a.* Toothed.

DENTICULATE, *a.* With small teeth.

DENTIGEROUS, *a.* Bearing teeth.

DENTIROSTRES, *n.* An artificial or arbitrary group in classifications, the members of which have the maxilla more or less notched near the tip.

DENTIROSTRAL, *a.* Tooth billed; pertaining to the *Dentirostres*.

DENUATION, *a.* Nakedness.

DEPLUMATE, *a.* Bare of feathers.

DERMAL, *a.* Pertaining to the skin.

DESMOGNATHOUS, *a.* Having the palate bones united.

DESQUAMATION, *n.* Peeling or scaling off.

DI (in composition). Twice; double (as *dichromatic*, two colored.)

DICHOTOMOUS, *a.* Paired, or by twos.

DICHROMATIC, *a.* In descriptive ornithology, a species is said to be dichromatic when it exists in two distinct plumages which are entirely independent of sex, age or season. These distinct plumages were formerly, in the case of most dichromatic birds, supposed to represent distinct species, and the nature of their real relationship is a comparatively recent discovery. Familiar examples of dichromatism are the rufous and gray forms of the little Screech Owl and the white and bluish or dusky forms of some Herons (as *Ardea occidentalis* and *Dichromanassa rufa*).

DICHROMATISM, *n.* The state of existing in two distinct phases of coloration, which are wholly independent of the usual causes of color differences (as sex, age and season). Dichromatism among birds is somewhat analogous to *dimorphism* in insects.

DIDACTYLE, { *a.* Two toed, as the
DIDACTYLOUS, { Ostrich.

DIGITIGRADE, *a.* Walking on the toes. (Applicable to most birds.)

DIMORPHIC, *a.* Existing in two forms, as some species of insects.

DIMORPHISM, *n.* The state of existing in two forms. (The nearest approach to dimorphism among birds is the state of dichromatism, which see.)

DISC, { *n.* Set of radiating feathers
DISK, { surrounding the eye in some birds, especially the Owls.

DISTAL, *a.* Toward or at the extremity. (Opposite of *proximal*, or toward the base.)

DISTICHIOUS, { *a.* Two rowed, as the
 { webs of a feather.

DITOKOUS, { *a.* Producing but two
 { eggs for each clutch, as the Pigeons, Humming-birds, and a few other groups.

DIVARICATE, { *a.* Spreading or curving
 { apart.

DORSAL, *a.* Pertaining to the back.

DORSUM, *n.* The back.

DOUBLE { *a.* A doubly emarginate
EMARGINATE, { tail has the middle and lateral
DOUBLY { feathers slightly
EMARGINATE, { longer than the intervening ones.

DOUBLE { *a.* A doubly forked tail has
FORKED, { the middle and lateral
DOUBLY { feathers decidedly longer
FORKED, { than those between.

DOUBLE { *a.* A doubly rounded tail
ROUNDED, { has the middle and lateral
DOUBLY { feathers shorter
ROUNDED, { than those between.

DOWN, *n.* Small, soft, decomposed feathers, which clothe the nestlings of many birds, and which also grow between and underneath the true feathers in the adults of many others, especially the various kinds of water fowl.

DOWNY, *a.* Pertaining to or having the nature of down, or clad with down.

E.

EAR COVERTS, *n.* The usually well-defined tract of feathers overlying the ears of most birds. The ear coverts (or *auriculars*, as they are usually termed in descriptions) are bounded above by the backward extension of the *supercilium*, or lateral portion of the crown, posteriorly by the occiput and nape, below by the malar region or "cheeks," and anteriorly by the sub-orbital region. (Same as *auriculars*.)

EARED, *a.* Decorated with tufts of feathers, distinguished by length or color, which by their appearance suggest the external ears of mammals.

EAR TUFTS, *n.* Erectile tufts of elongated feathers springing from each side of the crown or forehead, and presenting a close superficial resemblance to the external ears of many mammalia. They are especially characteristic of certain Owls (*Strigidae*).

ECONOMY, *n.* Physiological disposition. **ECTO** (in composition). Outer; as *ectozoon*, an external parasite.

EDGE OF WING, *n.* The anterior border of the wing, from the armpit to the base of the outer primary.

EMARGINATE, { *a.* An emarginate
EMARGINATED, { tail has the middle
 { feather shortest,
 { the rest successively a little
 { longer; hence, an
 { emarginate tail is
 { very slightly
 { forked. An emarginate quill has
 { the web suddenly
 { narrowed by an
 { abrupt cutting
 { away of the edges.

EMBRYO, *n.* In birds, the young before leaving the egg.

ENSATE, **ENSIFORM**, *a.* Sword shaped.

ENTO (in composition). Inner; as *entozoon*, an internal parasite.

EPI (in composition). Upon; as *epidermis*, upon the skin; *i. e.*, surface skin.

EPIDERMIS, *n.* The cuticle, or scarf skin.

EPIDERMIC, *a.* Pertaining to the epidermis.

EPIGNATHOUS, *a.* Hook billed, as a Hawk or Parrot.

EPITHEMA, *n.* A horny excrescence upon the bill.

ERYTHRISM, *n.* A particular state of plumage caused by excess of red or rufous pigment; it is one of the *dichromatic* states of many birds, as certain species of Owls (*Megascops asio*, etc.)

ETIOLATED, *a.* Whitened; bleached.

ETYPICAL, *a.* Tending away from normal or typical character.

EURHIPIDURA, *n.* The name of one of the primary groups of birds comprising all existing species.

EVEN, *a.* An even or "square" tail has, when closed, all the feathers terminating on the same transverse line; in other words, it is *truncated* at the tip. When spread, tips of feathers describe a semicircle, while an emarginate or slightly forked tail becomes even or truncated when spread.

EXCRESCENCE, *n.* Any outgrowth, whether cutaneous, corneous, or fleshy.

EXTENSILE, *a.* Susceptible of being extended or lengthened.

EYEBROW, *n.* The middle portion of the superciliary region, or that part immediately above the eye.

F.

FACIAL, *a.* Pertaining to the face.

FALCATE, { *a.* Shaped like a sickle

FALCIFORM, { or scythe.

FALCONINE, *a.* Falcon-like.

FAMILY, *n.* A systematic group in scientific classification, embracing a greater or less number of genera which agree in certain characters not shared by other birds of the same order. In rank, a *Family* stands between *Order* and *Genus*, the former being composed of a greater or less number of nearly related families. In zoological nomenclature, the name of a family is taken from a typical genus, the name of which is modified by the termination *idæ*, as *Falconidæ*, *Columbidæ*, etc. (*Subfamilies* by the termination *inæ*.)

FASCIA, *n.* A band or broad bar of color. FASCIATED, *a.* Banded or broadly barred.

FASCICLE, *n.* A bundle.

FASCICLED, { *a.* Bundled.

FASCICULATE, }

FASTIGIATE, *a.* Bundled together like a sheaf.

FEMORAL, *a.* Pertaining to the thigh proper, or the inner segment of the leg. (To be carefully distinguished from *tibial*, which refers to the so-called "thigh," or middle segment of the leg.)

FEMUR, *n.* The thigh; the thigh bone.

FERAL, *a.* Wild, or undomesticated. The wild Jungle Fowl (*Gallus ferrugineus*) is the *feral* stock of the domestic fowl.

FIBRILLA, *n.* A small fiber.

FILAMENT, *n.* A slender or thread-like fiber.

FILAMENTOUS, { *a.* Thread-like.

FILIFORM, }

FILOPLUMACEOUS, *a.* Having the structure of a filoplume.

FILOPLUME, *n.* A thread-like feather.

FIMBRIATED, *a.* Fringed.

FISSIPALMATE, *a.* With half-webbed feet, the free portion of the toes lobed, as a Grebe's foot.

FISSIPED, *a.* Having cleft toes. (Opposite of *palmiped*.)

FISSIROSTRAL, *a.* Having the mouth cleft far back of the base of the bill, as in the Goatsuckers, Swifts, etc.; pertaining to the *Fissirostres*.

FISSIROSTRES, *n.* An obsolete name of an artificial group of birds with deeply-cleft mouths, including the Goatsuckers, Swifts, and other "fissirostral" families.

FLANKS, *n.* In descriptive ornithology, the most posterior feathers of the sides.

FLOCCULENT, *a.* In descriptive ornithology, pertaining to the down of newly-hatched or unfledged young birds.

FLOCCUS, *n.* The down peculiar to unfledged or newly-hatched young birds; in *ptilopædic* birds, it covers the general surface and is unconnected with the future plumage, while in *psilopædic* birds it sprouts only from the undeveloped feathers, to the tips of which it is often seen clinging when the latter are considerably grown.

FLUVIATILE, *a.* Pertaining to rivers.

FOREHEAD, FRONT, { *n.* Fore part of the top of the head, from the base of the bill to the vertex of the crown.

FORENECK, *n.* A rather indefinite and arbitrary term, variously applied, but usually referring to the lower throat and jugulum, though not infrequently to the whole of the space included by the chin, throat and jugulum. In long-necked birds only does the term become a definite application.

FORFICATE, *a.* Deeply forked, as the tail of a Kite.

FORM, *n.* In a special sense, a sort of non-committal term, frequently used by modern writers to designate what is of doubtful rank. The term "form" is thus used for what may prove to be a species, or may be only a race, but as to the rank of which the author is in doubt.

FOSSA, *n.* A ditch or groove. In descriptive ornithology, used chiefly in the plural, to denote the depressions in which the nostrils are placed.

FOSSORIAL, *a.* Digging into the earth for a habitation. (The burrowing Owl, *Speotyto cunicularia*, is a fossorial bird.)

FOSTER PARENT, *n.* A bird which has reared the young of a parasitic species.

FOSTER YOUNG, *n.* The young of a parasitic species which has been reared in the nest of another bird.

FREE, *a.* Said of a leg with the tibia unconfined within the skin of the body.

FRENUM, *n.* A bridle or marking about the head, resembling or recalling a bridle.

FRINGE, *n.* A lacerated marginal membrane.

FRONTAL, *a.* Pertaining to the forehead.

FRONTLET, *n.* The extreme anterior portion of the forehead, usually distinguished by a difference of level (usually more depressed) from the forehead, as in the Woodpeckers. When divided by the base of the culmen (as in the Woodpeckers), the frontal points are called *antice*.

FRUGIVOROUS, *a.* Fruit eating.

FURCATE, *a.* Forked.

FUSIFORM, *a.* Spindle shaped, or tapering at each end.

G.

GALEATE, *a.* Helmeted, or armed, or ornamented with a frontal shield, as the Gallinules, Coots, Cassowaries, etc.

GALLINACEA, *n.* A name of the fowl tribe, or order *Gallinæ* of some authors.

GALLINACEOUS, *a.* Belonging to the order *Gallinacea* or *Gallinæ*, or that which embraces the domestic fowl and kindred birds; having the characteristics or nature of the *Gallinæ*.

GAPE, *n.* The opening of the mouth.

GASTRÆUM, *n.* The lower parts, collectively.

GENA, *n.* The cheek, or feathered portion of the lower jaw.

GENESIS, *n.* In biological science, the derivation or origin of a form, whether by evolution or direct creation.

GENETIC, *a.* Pertaining to *Genesis*.

GENUS, *n.* An assemblage of species which agree in the possession of certain characters distinguishing them from otherwise allied forms. (In taxonomic value a genus ranks next below a subfamily.)

GENYS, *n.* (Same as *gonys*, which see.)

GEOGRAPHICAL VARIATION, *n.* Modification of form or coloration, according to change of locality or country. (The majority of widely-distributed species are more or less affected by geographical variation, from varying influences of climate and other surroundings. Many species have evidently sprung from geographical races through the extermination of intermediate specimens, or, in the case of remote islands, by long and complete isolation from the parent stock.)

GIBBOSE, } *a.* Swollen.

GIBBOUS, }

GIBBOSITY, *n.* A swelling or rounded protuberance.

GLABROUS, *a.* Smooth.

GNATHIDIUM, *n.* The branch or ramus of the lower jaw, as far as it is covered by the horny sheath. (Chiefly used in the plural.)

GONYS, *n.* The keel or lower outline of the maxilla or lower mandible, from the tip to the point where the rami begin to diverge.

GORGET, n. An ornamented throat patch, distinguished by color or texture of feathers, as the gorget of a Hummingbird.

GRADIENT, a. Walking or running by steps. (Same as *ambulatory*, but preferable to that term.)

GRADUATED, GRADUATE, { *a.* A *graduated tail* has the middle feathers longest, the rest successively shorter; the difference in length not so great, however, as in a *cuneate tail*.

GRALLATOIRES, GRALLATORLE, { *n.* An arbitrary and artificial group of the older classifications, including the wading birds.

GRALLATORIAL, a. Wading; pertaining to the wading birds, or *Grallatores*.

GRAMINIVOROUS, a. Grass eating. (Geese are graminivorous.)

GRANIVOROUS, a. Seed eating, like certain Finches.

GRANULAR, GRANULATE, { *a.* With a roughened surface, like coarse sand paper.

GREATER COVERTS, GREATER WING COVERTS, { *n.* The most posterior series of wing coverts, or those which immediately overlay the base of the secondaries; hence, often and very appropriately called *secondary coverts*.

GULA, n. The throat.

GULAR, a. Pertaining to the throat.

GUTTATE, GUTTIFORM, { *a.* Drop shaped or tear shaped; having drop or tear-shaped spots.

GYMNOPÆDIC, a. Naked at birth. (Synonymous with *ptilopædic*.)

GYMORHINAL, a. Having naked or unfeathered nostrils.

H.

HABITAT, n. The region or locality inhabited by a species.

HABITUS, n. Mode of life.

HACKLE, n. A long lanceolate or falcate feather adorning the neck of the domestic cock. (Used chiefly in the plural, or in combination with neck, as *neck hackles*.)

HALLUCAL, a. Pertaining to the hallux or hind toe.

HALLUX, n. In birds possessing four toes, the hinder one is the hallux, no known birds having four toes directly forwards. In some birds, as certain Plovers, the Bustards, the *Struthiones*, etc., the hallux or hind toe is wanting. In three-toed birds having two in front and one behind, the hallux is usually the one wanting, the hind toe being in reality the fourth (or outer) toe reversed. When the toes are in pairs (two before and two behind), the hallux is usually the inner of the hinder pair, the exception being in the Trogons. The hallux reaches its best development in the *Passeres*, the *Accipitres*, *Striges* and *Rallidae*, but more especially in the first, in which it is usually as strong, if not stronger, than the largest of the anterior toes.

HAMULATE, a. Furnished with a small hook.

HAMULUS, n. A small hook; sometimes applied to the barbules or barbials of a feather, when hook shaped.

HAND QUILLS, n. The primary quills or primaries.

HASTATE, a. Shaped like a spear head.

HEEL, n. The upper posterior extremity of the tarsus.

HELMET, n. A naked shield or protuberance on the top or fore part of the head.

HERODIONES, n. A natural group of altricial waders, embracing the Storks, Wood Ibises, true Ibises, Spoonbills, Boatbills and Herods.

HERODIONINE, a. Pertaining to or partaking of the character of Herodiones.

HERRING BONE (markings), n. A series of transverse lines or bars connected along the middle of a feather by a longitudinal stripe or line of the same color.

HETERODACTYLE, n. The name of a natural group of birds, including only the Trogons.

HEXAGON, n. A figure of six sides.

HEXAGONAL, a. Having six sides.

HIND TOE, n. The posterior toe or hallux, which see.

HIRSUTE, a. Hairy or shaggy, as the foot of a Grouse.

HISTOLOGY, n. Minute anatomy.

HOLORHINAL, a. Having the posterior border of the osseous nares rounded. (See *schizorhinal*.)

HOMOGENEITY, n. Structural similarity.

HOMONYM, n. A word which in several senses has different meanings; as *Sylvicola*, Swainson, a genus of birds (now called *Dendroica*) is a homonym of *Sylvicola*, Humphreys, previously applied to a genus of mollusks. (Opposite of *synonym*.)

HOMOTYPICAL, a. Of the same structural type.

HOMOTOPY, n. A particular kind of homology.

HORNOTINE, a. or n. A young bird in its first year.

HUMERAL, a. Pertaining to the humerus; or, more generally, to the upper arm.

HUMERUS, n. The upper arm bone; or, the whole of the upper arm.

HYBRID, a. or n. The progeny resulting from sexual intercourse of distinct species.

HYBRIDIZATION, n. Production of hybrids.

HYBRIDIZE, a. To cross and bear offspring which unite the characters of two species.

HYEMAL, a. Pertaining to winter.

HYOID, a. Properly pertaining to the *os hyoides* or tongue bone, but frequently applied with reference to the tongue itself.

HYPERCHROMATISM, n. State of highly-increased brightness or intensity of coloration, or excess of pigment.

HYPERTROPHY, n. Unusual development of a part or organ. (Opposite of *atrophy*.)

HYPPOCHONDRIIS, { n. The flanks.
HYPPOCHONDRIUM, { (Used chiefly in the plural.)

HYPPOCHONDRIAC, a. Pertaining to the flanks.

HYPPOGNATHOUS, a. Having the maxilla, or lower mandible, longer than the mandible, as in the Skimmers (*Rhynchops*).

HYPOPTILUM, n. An accessory plume, attached to the barrel or stem of ordinary feathers, excepting always the remiges and rectrices. (Essentially the same as *aftershaft*.)

HYPORADII, n. Bars of the hypoptilum, or aftershaft.

HYPORRHACHIS, n. The aftershaft, or stem of the accessory plume, or hypoptilum.

I.

IGNOBLE, a. Said of certain Hawks used in falconry. Technically applied to the short-winged Hawks (that is, the Goshawk and Sparrowhawk) to distinguish them from the *noble* Falcons (that is, true Falcons).

ILIAC, a. Pertaining to the flanks.

IMBRICATE, { a. Overlapped, like
IMBRICATED, { shingles upon a roof.

IMPERFORATE, a. Not pierced through.

INCISED, a. Cut out; cut away.

INCUBATION, n. The act of sitting on eggs, in order to hatch them.

INCUMBENT, a. Laid at full length. (Said of the hallux, or hind toe, when inserted on a level with the anterior toes.)

INDENTED, a. Notched along the margin with a different color.

INFRA (in composition). Situated under, or beneath. (Opposite of *supra*, above.)

INFRAORBITAL, a. Below the orbit. (Same as *suborbital*, which is more often used.)

INFLEXED, a. Turned inward.

INFUNDIBULIFORM, a. Funnel shaped.

INGUINAL, a. Pertaining to the groin.

INNER TOE, n. That situated on the inner side of the foot, whether anterior or posterior, but usually the former. (The anterior inner toe is usually the second, but in some zygodactyle forms, as the Trogons, it is the third, the second toe being reversed, thus becoming the inner posterior toe. In a very few, as certain Kingfishers, the second toe is rudimentary or wanting, while in others the first, or hallux, is reversed, and thus becomes the inner anterior toe.)

INSECTIVOROUS, a. Feeding on insects.

INSESSORES, n. An obsolete name formerly applied to an artificial group embracing the *Passeres* and other "perching" birds.

INSESSORIAL, a. Pertaining to or having the character of perching birds.

INSISTENT, a. Said of the hind toe when the greater part of its under surface touches the ground. (Same as *incumbent*.)

INTEGUMENT, n. A covering or envelope, usually membranous, as the skin of animals, covering of seeds, etc.

INTERMAXILLARY, n. or a. The principal bone of the upper jaw, or relating to the same. (Same as *premaxillary*.)

INTERORBITAL, *a.* Between the eye sockets.

INTERRAMAL, *a.* Between the forks or rami of the lower jaw.

INTERMEDIATE, *n.* The middle pair of tail feathers, or middle retrices.

INTERSCAPULAR, *a.* Between the scapulars.

INTERSCAPULARS, *n.* The feathers of the interscapulum, or back.

INTERSCAPULUM, *n.* The region between the scapular tracts, or the back proper.

INTERTROPICAL, *a.* Between the tropics; tropical.

INVAGINATE, *a.* Sheathed.

IRIAN, } *a.* Pertaining to the iris.

IRIDIAN, } *a.* Pertaining to the iris.

IRIS, *n.* The (usually) colored circle of the eye surrounding the pupil.

ISOPOGONOUS, *a.* Having the two webs equal in breadth.

ISTHMUS, *n.* A narrow strip, or neck, connecting two larger areas.

J.

JUGULAR, *a.* Pertaining to the jugulum.

JUGULUM, *n.* The lower throat, or fore-neck, immediately above the breast. It is a well-defined area in the Hawks, Vultures, Pigeons, Ducks, and some other groups.

K.

KIDNEY SHAPED, *a.* Somewhat heart shaped, but without the point, and broader than long.

KNEE, *n.* Properly the femoro-tibial joint, concealed in most birds; but usually the tibio-metatarsal articulation, or heel, is so called.

L.

LACERATE, } *a.* Jagged, or slashed at the end or along the edge.

LACINIATE, } *a.* Jagged, or slashed at the end or along the edge.

LACHRYMAL (bone), *n.* A large bone bounding the orbit anteriorly and above; it is especially well-developed in certain *Falconidae*.

LACUSTRINE, *a.* Lake inhabiting.

LAGOPUS, *n.* A genus of birds having the tarsi and toes covered with feathers, giving the foot a resemblance to that of the hare.

LAMBDOID, *a.* L-shaped.

LAMELLIROSTRAL, *a.* Having a lamellate bill.

LAMELLIROSTRES, *n.* A group of birds embracing the *Anatidae* and *Flamingoes*, in which the bill is lamellate edged.

LAMINA, } *n.* A thin plate or scale.

LAMELLA, } *n.* A thin plate or scale.

LAMINATE, } *a.* Plated or scaled.

LAMELLATE, } *a.* Plated or scaled.

LANCEOLATE, *a.* Lance shaped; tapering gradually to a point at one end, and more abruptly at the other.

LANUGINOUS, *a.* Woolly.

LEG, *n.* As generally used, synonymous with *tarsus*; as, "legs and feet"—tarsi and toes.

LESSER WING COVERTS, *n.* The smaller wing coverts, forming a more or less well-defined tract immediately anterior to middle coverts, and thence to anterior border of inner wing.

LIMBATE, *a.* Edged with a different color.

LIMICOLÆ, *n.* The group of shore birds; a more or less natural group, embracing the Plovers, Sandpipers, Snipe, Curlew, etc.

LIMICOLINE, *a.* Shore inhabiting; pertaining to, or having the character of, the *Limicolæ*.

LINEOLATE, *a.* Marked with little lines.

LINING OF THE WING, *n.* The under wing coverts collectively, especially the lesser and middle.

LITTORAL, *a.* Pertaining to the sea shore.

LOBATE, } *a.* Furnished with membranous flaps, as the toes of a coot (*Fulica*).

LOBED, } *a.* Furnished with membranous flaps, as the toes of a coot (*Fulica*).

LOBE, *n.* A membranous flap.

LONG ENsertED, *a.* Said of tail feathers when abruptly much longer than the rest.

LONGIPENNES, *n.* A group of long-winged swimming birds, formerly embracing the Gulls and their allies, and the *Procellariidae* (Petrels, Albatrosses and Fulmars), but properly restricted to the *Laridae*, *Rhynchopidae* and *Stercorariidae*.

LONGIPENNINE, *a.* Pertaining to the *Longipennes*.

LONGIROSTRAL, *a.* Having a long bill, or pertaining to the artificial and obsolete group *Longirostres*.

LONGIROSTRES, *n.* An obsolete group of birds, embracing certain long-billed forms.

LORAL, *a.* Pertaining to the lores.

LORE, *n.* The space between the eyes and bill in birds.

LOWER PARTS, n. Entire under surface of bird—chin to crissum, inclusive.
LOWER TAIL COVERTS, n. The feathers immediately underneath the tail. (See *crissum*.)
LUMBAR, a. Pertaining to the loins.
LUNULATE, a. Narrowly crescent-shaped.
LUNULE, n. A small or narrow crescent.
LURID, a. "A color between purple, yellow and gray;" livid.
LUTEOUS, a. Yellowish; more or less like buff or clay color.
LYRATE, a. Shaped like a lyre, as the tail of the male Blackcock, or that of the Lyre-bird.

M.

MACULA, n. A spot.
MACULATE, a. Spotted.
MALA, n. The side of lower jaw, behind the horny covering of the mandible.
MALAR, a. Pertaining to the *mala*.
MALAR APEX, n. The extreme anterior point of the malar region.
MALAR REGION, n. The side of the lower jaw behind the horny covering of the mandible, usually feathered. In most birds it is a well-defined tract, extending backward from the base of the maxilla, beneath the lores, orbits and auriculars, and bounded beneath by the chin and throat.
MANDIBLE, n. The jaw; when not otherwise indicated, the lower part of the bill is understood.
MANDIBULAR, a. Pertaining to the mandible.
MANTLE, n. In certain *Laridæ* and some other birds, the *mantle* is that portion of the upper plumage distinguished from the other parts by a peculiar and uniform color, suggesting, by its position, a mantle thrown over the body. It usually includes simply the back, scapulars and wings, and the term is perhaps appropriate only when thus restricted.
MASKED, a. Having the anterior portion of the head colored differently, in a conspicuous manner, from the rest of the plumage.
MAXILLA, n. The jaw; but best restricted to the upper jaw, sometimes called upper mandible.
MAXILLARY, } a. Pertaining to the
MAXILLAR, } maxilla or upper bill.
MEDIAN, } *a.* Along the middle line.
MEDIAL, }

MELANISM, n. A peculiar state of coloration resulting from excess of black or dark pigment. The normal colors of the plumage are replaced by a more or less continuous black or dusky color. The opposite extreme of color from *albinism*, and of frequent occurrence in the family *Falconidæ*.

MELANISTIC, } a. Affected with melan-

MELANOTIC, } ism.

MENTAL, a. Pertaining to the chin or *mentum*.

MENTAL APEX, n. The extreme anterior point of the chin.

MENTUM, n. The chin or anterior part of the space between the rami of the lower jaw.

MESIAL, a. Along the middle line. (Same as *medial*.)

MESO (in composition). Middle; median.

MESORHINAL, a. Situated between the nostrils.

METACARPAL, a. Pertaining to the hand or *metacarpus*.

METACARPUS, n. The hand, exclusive of the fingers; the segment of the wing between the carpus and digits.

METAGNATHOUS, a. Cross billed; with the points of the maxilla and mandible crossing on the right and left.

METATARSAL, a. Pertaining to the *metatarsus*.

METATARSUS, n. That portion of the leg of birds which in descriptive ornithology is called the *tarsus*; or that portion, usually unfeathered, which extends from the toes to the so-called "knee"; that is, the heel.

MIDDLE TOE, n. The middle one of the three anterior toes. It is usually four-jointed, and longer than the lateral toes. In numerical order it is the third, the hind toe or hallux being the first, and the inner toe the second. In zygodactylous birds, it corresponds to the outer anterior toe, the fourth toe being reversed.

MIDDLE COVERTS, } n. The series of coverts, usually in a single transverse row, situated between the lesser and greater or secondary coverts. They usually overlap one another in the reverse manner from the other coverts, the inner or upper edge being the one exposed.

**MIDDLE WING COVERTS, }
 MEDIAN COVERTS, }**

- MIGRATION, n.** Periodical change of abode, influenced chiefly by seasonal changes in climate, in which case the migration is regularly *periodical*, the vernal or spring migration being, in the northern hemisphere, northward, the autumnal migration southward, but *vice versa* in the southern hemisphere. The migrations of many birds, however, are *irregular* or *erratic*, being prompted by the necessity of finding the requisite food supply. The Passenger Pigeon, American Robin, Cedarbird, etc., are migratory in this sense; while the Tanagers, Orioles and others, which pass the summer only in northern latitudes and the winter entirely within the tropics, are periodical migrants.
- MIMETIC, a.** Imitative; pertaining to or given to mimicry.
- MIMESIS, MIMICRY,** { *n.* Mockery or imitation of voice, shape, color, etc. The term *protective mimicry* is applied to animals which imitate in color or shape objects by which they are surrounded or species with which they are associated.
- MIRROR, n.** A name occasionally given to the *speculum* or metallic wing spots of Ducks, etc.
- MOLLIPOSE, a.** Softly downy.
- MONOGAMOUS, a.** Mating with a single individual of the opposite sex. Applied to species which pair. Those in which the male assists in incubation and rearing the young are *doubly monogamous*.
- MONOGAMY, n.** The state of pairing, or having a single companion.
- MONOMORPHIC, a.** Of essentially the same or similar type of structure. (Opposite of *polymorphic*.)
- MONOTOKOUS, a.** Laying a single egg, as the Petrels, Auks, etc. (Same as *uniparous*.)
- MORPHOLOGICAL, a.** Pertaining to morphology.
- MORPHOLOGY, n.** The science which treats of the laws of form, or the principles of structure. Morphology is the basis of *homology*, while analogy is based upon *teleology*.
- MUSTACHE, n.** In descriptive ornithology, any conspicuous stripe on the side of the head beneath the eye.
- MUCRONATE, a.** Spine tipped, as the rectrices of the Chimney Swift (*Chætura pelagica*).
- MUCRONULATE, a.** Tipped with small points.
- MULTIPAROUS, a.** Producing many eggs.
- MURAL, a.** Pertaining to a wall.
- MURICATE, } a.** Clothed with sharp
- MURICATED, } points, or prickles.**
- MYRMOTHERINE, a.** Applied to birds which feed upon ants.
- ## N.
- NAPE, n.** The upper portion of the hind-neck, or cervix.
- NARIS, n.** The nostril. The *external nares* open upon some part of the maxilla or upper mandible. In some birds (as the Pelicans, Cormorants, and other *Steganopodes*, and the Toucans), they are basal and more or less obsolete; in others (as the Woodpeckers and members of the Crow family), they are concealed by the antrorse frontal tufts of feathers. The *internal nares* open as longitudinal slits in the posterior portion of the palate.
- NASAL OPERCULUM, n.** The scale or hardened membrane overhanging the nostril in some birds.
- NASCENT, a.** Beginning to grow or exist, or in process of development. A *nascent species* is one which is yet connected with the ancestral stock by individuals of intermediate character. Well-known examples may be cited, in the *Colaptes auratus* and *C. mexicanus*, which possess very uniform and pronounced characteristics of color, etc., but are connected by specimens of intermediate characters, formerly supposed to be hybrids, but which are now with good reason believed to be merely representatives of the ancestral stock, and tending more or less toward one or the other of the extremes of differentiation represented by the above named *nascent species*.
- NATATION, n.** Act of swimming.
- NATATOIRES, n.** Swimming birds, as Geese, Ducks, Gulls, etc.
- NATATORIAL, a.** Capable of swimming; pertaining to the act of swimming, or to swimming birds.
- NAVICULAR, a.** Boat shaped.

NEBULATED, *a.* Clouded, or indistinctly marked with faint, indefinite and irregular colors.

NEMORAL, *a.* Pertaining to a wood or grove.

NEOGÆAN, *a.* Pertaining to the western hemisphere, or new world.

NEOSSOLOGY, *n.* The study of young birds.

NEOTROPICAL, *n.* Pertaining to the tropical portions of America, or the new world.

NIDIFICATION, *n.* Nest building or nesting habits.

NOMENCLATURE, *n.* The names of things, according to a recognized principle of naming, or those peculiar to any department of science. Various systems of nomenclature have been employed in the naming of animals and plants. Previous to the institution of the *binomial* system of Linnaeus (first promulgated in zoölogy in 1758), the *polynomial* system, or the use of several terms as the name of a species, was much in vogue. That now employed is the *binomial* system of Linnaeus, in which usually only two terms are used, the one generic, the other specific, but occasionally modified, according to requirements of modern science, by use of a third term after the specific one, for the designation of nascent species or subspecies.

NOTEUM, *n.* The Latin equivalent for "upper parts."

NUCHA, *n.* The nape or upper part of the cervix. (Often, but incorrectly, used for the whole cervix.)

NUCHAL, *a.* Pertaining to the nape.

NUPTIAL ORNAMENTS, *n.* As distinguished from *nuptial plumes*, any temporary growth from the unfeathered portion of a bird, characteristic of or peculiar to the breeding season. The compressed maxillary process of the American White Pelican, and the accessory or supernumerary portions of the bill in many *Alcidae*, are among the best-known examples.

NUPTIAL PLUMAGE, *n.* A particular plumage, particular to the breeding season, characteristic of some birds.

NUPTIAL PLUMES, *n.* Ornamental feathers, acquired at the approach of the breeding season and cast at the close of that period, as the lengthened plumes of many Herons, the crest and filamentous feathers of some Cormorants, etc.

O.

OARED, *a.* An *oared foot* has the hind toe, or hallux, united on one side with the anterior toes by a web or connecting membrane. Hence the name *Steganopodes*, applied to the group including the Pelicans, Cormorants, etc., in which the feet are of this character.

OBCORDATE, *a.* Shaped like an inverted heart.

OCCIPITAL, *a.* Pertaining to the hind head, or occiput.

OCCIPUT, *n.* The back part of the head, bounded below by the nape, anteriorly by the vertex.

OCELLATE, *a.* Marked with *ocelli*, or eye spots.

OCELLUS, *n.* A distinct, rounded, usually bright-colored spot, more or less resembling the eyes, or *ocelli*, of a Peacock's train.

OCREATE, *a.* Booted, or having the anterior covering of the tarsus undivided for the greater part of its length.

OLIGOTOKOUS, *a.* Producing few eggs.

OMEGOID, *a.* Resembling in form the Greek capital letter *omega*.

OÖLOGICAL, *a.* Pertaining to oölogy.

OÖLOGY, *n.* The science of birds' eggs.

OPERCULUM, *n.* A lid or cover, such as the scale overhanging the nostrils (*operculum narsi*) of many birds.

OPHTHALMIC, *a.* Pertaining to the eye.

ORAL, *a.* Pertaining to the mouth.

ORBICULAR, *a.* Circular.

ORBIT, *n.* The region immediately around the eye.

ORBITAL RING, *n.* A ring or circle of color immediately surrounding the eye.

ORDER, *n.* In natural history, a group of families possessing in common peculiar characteristics.

ORDINAL, *a.* Pertaining to an order.

ORNITHIC, *a.* Pertaining to birds.

ORNITHOTOMY, *n.* The anatomy of birds.

OSCININE, *a.* Pertaining to the *Oscines*; musical, or capable of singing.

OSCINES, *n.* The name of a natural group of singing, passerine birds, comprising the singing birds *par excellence*, characterized by a highly-specialized vocal apparatus. (Same as *Polymyodæ*.)

OSSEOUS, *a.* Bony.

OSSIFIED, *a.* Become bony.

OSTEOLOGICAL, a. Pertaining to osteology.

OSTEOLOGY, n. The science of bones; descriptions of the bones or the bony structure of animals; also, the osseous system.

OUTER WEB, n. The outer web of a feather is that farthest from the central line of the body; in wing feathers, it is that farthest from the base of the wing, or toward the outer edge of the wing.

OVARIUM, { n. The organ in which
OVARY, { eggs are developed.

OVIDUCT, n. The tube through which the egg passes from the ovary.

OVIPAROUS, a. Producing eggs in which the young develop after exclusion from the body.

OVIPOSITION, n. Act of laying eggs.

P.

PALAMA, n. The web or membrane between the toes of certain birds.

PALATAL, { a. Pertaining to the pal-
PALATINE, { ate.

PALATE, n. The roof of the mouth.

PALEA, n. A dewlap, or fleshy, pendulous skin on the throat or chin, as in a Turkey or domestic fowl.

PALLIUM, n. A mantle.

PALMATE, { a. Having the three
PALMATED, { anterior toes fully
PALMIPED, { webbed. (Compare
Semipalmate and *Totipalmate*.)

PALPEBRA, n. The eyelids.

PALPEBRAL, a. Pertaining to the eyelids.

PALPEBRATE, a. Having eyelids.

PALUDICOLE, a. Marsh inhabiting.

PALUDINE, { a. Pertaining to marsh
PALUSTRINE, { or swamp.

PANDURATE, { a. Fiddle shaped.
PANDURIFORM, {

PAPILLA, n. A small, nipple-like elevation.

PAPILLOSE, { a. Having papillæ.
PAPILLATE, {

PAPULA, n. A pimple or pimple-like elevation.

PAPULOUS, { a. Pertaining to or having
PAPULOSE, { pimples.

PARAGNATHOUS, a. Having both mandibles of equal length, the tips meeting.

PARASITE, n. In oölogy, a species which constructs no nest and performs none of the duties of incubation or rearing of the young, but imposes on other birds for this purpose. A parasitic bird is also a species which obtains its food by systematically robbing other species, as the parasitic Jaeger and the Bald Eagle.

PARASITIC, a. Depositing the eggs in the nests of other birds, to which are left the duties of incubation and care of the young. The European Cuckoo and the common Cow Blackbird are well-known examples.

PAROTIC, { a. Pertaining to the region
PAROTID, { immediately beneath the ear.

PASSERES, n. A group of birds including the most highly-developed forms, such as the Thrushes, Warblers, the Sparrow tribe, Crow family, etc., but not the Swifts, Hummingbirds, Kingfishers, Woodpeckers, etc., which belong to entirely distinct orders.

PASSERINE, a. Pertaining to, or having the character of, the *Passeres*.

PECTINATE, { a. Having tooth-like
PECTINATED, { projections, like the teeth of a comb, as the toes of the Grouse.

PECTINATION, n. Comb-like toothings.

PECTORAL, a. Pertaining to the breast.

PECTUS, n. The breast.

PEDES, n. The feet, which in birds includes the leg below the tibia.

PELAGIC, a. Frequenting the high seas.

PELASOIC, a. Wandering.

PELMA, n. The under surface of the foot.

PENCILLATE, a. Brush tipped or pencil-like.

PENNA, a. A perfect feather.

PENNACEOUS, a. Pertaining to a perfect feather, or having the character of the same.

PETROUS, a. Stony; hard, like a stone.

PHALANX, n. In birds, a joint (not hinge or articulation) or segment of the toes.

PHASE, n. Used more especially in the case of dichromatic species, as the *melanistic phase*, the *rufescent phase*, etc.

PICI, n. The name of a natural group, or order, of zygodactyle birds, comprising the Woodpeckers and Wry-necks.

PICINE, *a.* Pertaining to the Woodpecker tribe; Woodpecker-like.

PILEATE, } *a.* Capped, or with the
PILEATED, } whole pileum crested.
Different from *crested*,
in that the latter is used
to designate an elongation
of the feathers on
a particular part of the
pileum, as a *frontal*,
vertical or *occipital*
crest.

PILEUM, *n.* The cap, or whole top of head from bill to nape, and therefore including the forehead, vertex (or crown), and occiput.

PILOSE, *a.* Slightly hairy.

PINNATE, } *a.* Having wing-like tufts
PINNATED, } of elongated feathers on
the side of the neck.

PINNIFORM, *a.* Fin-like, as a Penguin's wing.

PINTAILED, *a.* Having the central tail feathers elongated and narrowly acuminate, as in the male Pintail Duck.

PISCIVOROUS, *a.* Feeding upon fish.

PLAGA, *n.* A stripe.

PLANTA, *n.* The posterior face of the tarsus.

PLANTAR, *a.* Pertaining to the planta.

PLANTIGRADE, *a.* Walking on the back of the tarsus.

PLASTIC, *a.* Capable of being moulded; easily modified.

PLUMA, *n.* A feather.

PLUMPED, *a.* Having the feet feathered.

PLUMOSE, *a.* Feathered.

PLUMULA, *n.* A down feather.

PLUMULACEOUS, *a.* Downy; bearing down.

PODIUM, *n.* The foot.

PODOTHECA, *n.* The whole envelope of the legs and feet.

POGONIUM, *n.* The web of a feather.

POLLEX, *n.* The thumb. In birds, the joint (homologous with the index finger of a man) which bears the alula, or bastard wing.

POLYMORPHIC, *a.* Many formed; containing or consisting of many forms, or different types. In ornithology, a species is *polymorphic* when it presents several distinct phases of coloration in the same locality or within a restricted geographical area. Thus, some of the Hawks (e.g., *Buteo swainsoni*) are polymorphic in this sense.

POLYMODÆ, *n.* The name of a natural group of passerine birds, characterized by highly specialized vocal organs. (Synonymous with *Oscines*.)

POLYNOMIAL, *a.* or *n.* Consisting of several words, as the polynomial nomenclature, by which a species was designated by a descriptive phrase. This system of nomenclature preceded the establishment of the *binomial* system, established by Linnæus. A name consisting of several words.

POLYTOKOUS, *a.* Producing many eggs, or young. (Synonymous with *multiparous*.)

POSTERIOR TOE, *n.* In most birds, the hallux, or hind toe. In some, however, one of the anterior toes is directed backward, and also becomes a posterior, or hind, toe.

POSTOCULAR, } *a.* Back of, or posterior to, the eye.
POSTORBITAL, } The former is most used.

POWDER-DOWN FEATHERS, *n.* Peculiar, imperfect feathers, which grow in matted patches, usually on the interspaces between the true feather tracts; characterized by a greasy texture and scurfy exfoliation. They are particularly characteristic of the Heron tribe, but are found in other groups.

PRÆCOCES, *n.* A more or less artificial group of birds, whose young run about and feed themselves immediately after emerging from the egg. The group is composed of the orders *Galinae*, *Limicolæ*, *Alectorides*, *Anseres*, *Pygopodes* and *Struthiones*.

PRÆCOICIAL, *a.* Having the nature of, or pertaining to, the *Præcoces*.

PRESSIROSTRAL, *a.* Pertaining to the *Pressirostres*.

PRESSIROSTRES, *n.* The systematic name of the Cuvierian artificial group of grallatorial birds with hard, compressed bills, comprising the Plovers, Cranes, etc.

PRIMARY, *n.* Any one of the quill feathers of the "hand wing," usually nine to eleven in number. Used chiefly in the plural, as distinguished from the *secondaries*, or those of the remiges which grow upon the forearm.

PRIMARY COVERTS, *n.* The series of stiff feathers, usually corresponding with the primaries in their graduation, which overlie the basal portion of the latter.

PROCERES, { *n.* A name given by Illiger
PROCERI, { to the *Struthionex*.

PROTRACTILE, { *a.* Capable of being
PROTRUSILE, { thrust forward or
elongated, as the
tongue of the Wood-
pecker or a Hum-
mingbird.

PSILOPÆDES, *n.* A more or less artificial group of birds, born weak and helpless, and further distinguished by a scant growth of down affixed to the undeveloped *pteryla*, or future feathers, to which it is temporarily attached. The *Passeres* and most of the *Picaræ* belong to this group. (Synonymous with *Gymnopædes*.)

PSILOPÆDIC, *a.* Pertaining to, or having the nature of, the *Psilopædes*.

PSITTACI, *n.* A very natural group of birds, comprising the Parrot tribe only.

PTERYLA, *n.* An area or tract of the skin on which feathers grow. A "feather tract."

PTERYLOGRAPHY, *n.* A description of the plumage, with reference to the distribution of the feather tracts or *pteryla*.

PTERYLOSIS, *n.* The plumage, considered with reference to its distribution on the skin.

PTILOPÆDES, *n.* A more or less artificial group of birds, instituted by Professor Sundevall, including those which at birth are covered with down. (Synonymous with *Dasypædes*.)

PTILOPÆDIC, *a.* Pertaining to, or having the character of *Ptilopædes*. Clothed at birth with down, like the chick of the domestic fowl, a duckling, or a gosling.

PTILOSIS, *n.* Plumage.

PULLUS, *n.* A chick. Applied to the downy young of *Ptilopædic* or *præocial* birds.

PUNCTATE, *a.* Dotted.

PUPIL, *n.* The central black (or dark blue) spot or disk of the eye, enclosed within the iris.

PYGPODES, *n.* A group of swimming birds, containing the families *Podicipidæ*, *Colymbidæ* and *Alcidæ*, distinguished by the extreme posterior position of the legs.

PYGOPODOUS, *a.* Pertaining to or having the character of the *Pygopodes*.

PYRIFORM, *a.* Pear shaped.

Q.

QUILL, *n.* As generally used, one of the primary remiges; and perhaps best so restricted.

QUINARY, *a.* Consisting of or arranged by fives. The *quinary system* of classification, formerly much in vogue, presumed five types for each natural group; that is, five species to a genus, five genera to a family, etc.

QUINCUNX, *n.* A set of five, arranged thus: ∴

R.

RACE, *n.* A nascent species or "form," which on account of the existence of intermediate specimens cannot be considered a species, no matter how great a degree of differentiation may have been reached. Races are distinguished as *geographical* and *local*, according as to whether they occupy extensive or limited areas of country. Geographical races are usually correlative with definite geographical areas, being, in fact, the expression of geographical variation.

RADIAL, *a.* Pertaining to the radius.

RADII, *n.* The barbs of a perfect feather.

RADII ACCESSORII, *n.* The barbs of a supplementary feather or aftershaft.

RADIOLI, *n.* The barbs of the radii or barbules.

RADIOLI ACCESSORII, *n.* The barbules of a supplementary plume or aftershaft.

RADIUS, *n.* The outer bone of forearm.

RAMUS, *n.* A branch or fork, as the ramus of the lower mandible; that is, *mandibular ramus*.

RAPTORES, *n.* An artificial group of birds, including the so-called "Birds of Prey."

RAPTORIAL, *a.* Pertaining to the birds of prey, or having the characteristics of the *Raptores*.

RASORES, *n.* The name of the *Gallinaceæ* in some of the older classifications.

RASORIAL, *a.* Pertaining to the *Rasores* or scratching birds.

RATITÆ, *n.* A group of birds, more or less artificial, including those with a flat or unkeeled sternum, and comprising the orders *Struthionex* and *Apterygæ*, all other existing birds being included in the *Carinata*, which have a keeled sternum.

RAUCOUS, *a.* Hoarse voiced.
RECTRIX, *n.* Any one of the tail feathers. (Used chiefly in the plural.)
REFRACTED, *a.* Abruptly bent, as if broken.
REMEX, *n.* Any one of the longer wing feathers. (Used chiefly in the plural.) The remiges are of two kinds, namely: The *primary remiges* or quills of the hand wing, and the *secondary remiges* or quills of the forearm.
RENIFORM, *a.* Kidney shaped.
REPLICATE, *a.* Folded over so as to form a groove or channel.
REPLICATED, *a.* Marked with cross lines like the meshes of a net.
RETICULATE, *a.* Marked with cross lines like the meshes of a net.
RETICULATED, *a.* Marked with cross lines like the meshes of a net.
RETICULATION, *n.* Net work.
RETRACTILE, *a.* Susceptible of being drawn back and driven forward, as a cat's claw.
RETROSE, *a.* Directed backward.
RHACHIS, *n.* The shaft of a feather, exclusive of the hollow basal portion or "barrel."
RHINAL, *a.* Pertaining to the nose.
RHOMBOID, *a.* Lozenge shaped.
RICTAL, *a.* Pertaining to the rictus.
RICTUS, *n.* The gape; sometimes restricted to the corner of the mouth, or *angulus oris*.
ROSTRUM, *n.* The beak.
ROUNDED, *a.* A *rounded tail* has the central pair of feathers longest, the remainder successively a little shorter. A *rounded wing* is one in which the first primary is short, the longest quill being the third, fourth or fifth, or one nearly midway between first and last.
RUGA, *n.* A ridge or wrinkle.
RUGOSE, *a.* Wrinkled.
RUMP, *n.* That portion of the upper surface of the body lying between the interscapulars and upper tail coverts.
RUPICOLINE, *n.* Rock inhabiting.

S.

SAGITTATE, *a.* Shaped like an arrow-head.
SALIVARY GLANDS, *n.* The organs which secrete the saliva, or spittle.
SALTATORY, *a.* Progressing by leaps; hopping.
SAURGNATHOUS, *a.* The want of fusion of the parts of the palate at mid-line.
SAUROPSIDA, *n.* A primary group of vertebrate animals, comprising birds and reptiles.

SAXICOLINE, *a.* Stone inhabiting; pertaining to or having the characteristics of the Stone Chats.
SCABROUS, *a.* Scabby; scurfy; scaly.
SCANDENT, *a.* Climbing.
SCANSORIAL, *a.* Capable of climbing, as a Woodpecker. Pertaining to the obsolete group *Scansores*.
SCAPULA, *n.* The shoulder blade.
SCAPULAR, *a.* Pertaining to the scapula.
SCAPULAR REGION, *n.* The usually well-defined longitudinal area of feathers overlying the shoulder blade. They lie on each side of the back (whence the feathers of the latter region are frequently called *interscapulars*).
SCHIZOGNATHOUS, *a.* Having the maxillo-palatine bones separated.
SCHIZORHINAL, *a.* Having the posterior margin of the osseous nares decidedly slit-like or triangular.
SCISSOR SHAPED, *a.* A *scissor-shaped* tail is one that is deeply forficate, thus resembling the blades of a pair of shears.
SCOLOPACINE, *a.* Snipe-like; pertaining to or having characteristics of the Snipe family.
SCUTELLATE, *a.* Provided with scutella, or transverse scales.
SCUTELLUM, *n.* One of the regular transverse scales, or plates, of the tarsus or toes of a bird.
SCUTIFORM, *a.* Shield shaped.
SECONDARY COVERTS, *n.* Properly the posterior row of wing coverts, which overlie the basal portion of the secondaries. The greater wing coverts.
SECONDARIES, *n.* The long feathers of the forearm, which in the spread wing appear in a continuous row with the primaries.
SECONDARY QUILLS, *a.* Half-webbed; having the membrane between the anterior toes reaching not more than half way to their ends.
SECONDARY REMIGES, *a.* Half-webbed; having the membrane between the anterior toes reaching not more than half way to their ends.
SEMIPALMATE, *a.* Half-webbed; having the membrane between the anterior toes reaching not more than half way to their ends.
SEMIPALMATED, *a.* Half-webbed; having the membrane between the anterior toes reaching not more than half way to their ends.
SENILE, *a.* Aged; pertaining to old age.
SEPTUM, *n.* A partition.
SERICEOUS, *a.* Silky.
SERRATE, *a.* Toothed, like a saw.
SERRATED, *a.* Toothed, like a saw.
SESSILE, *a.* Resting directly upon an object, without stem or peduncle.
SETACEOUS, *a.* Bristly; bristled.

- SETÆ, n.** Bristles or bristle-like feathers.
SETIFORM, a. Bristle-like.
SHAFT, n. The midrib of a feather.
SIBILANT, a. Hissing.
SIDE OF NECK, n. The space included between the cervix and the jugulum.
SIDES, n. The lateral portions of the inferior surface of a bird's body, extending from near the armpits to and including the flanks. The sides are subdivisible into sides of breast, sides proper, and flanks.
SIGMOID, a. Shaped like the letter S.
SINCIPITAL, a. Pertaining to the sinciput, or anterior half of the pileum.
SINCIPUT, n. The anterior half of the pileum. (Nearly synonymous with *forehead*, but denoting a more extensive area; that is, the frontlet, forehead, and anterior part of the crown, together.)
SINUATE, } a. Said of a feather when
SINUATED, } the edge is gradually cut away.
SPATULATE, a. Spoon shaped; that is, gradually narrowed toward the end, when suddenly widely expanded.
SPECIES, n. The aggregate of individuals related by generic descent, and differing constantly in certain features, whereby they are distinguished from all other beings.
SPECULUM, n. A mirror-like or bright-colored area, usually comprising the secondaries, on the wing of certain Ducks.
SPINOSE, } a. Having spines; some-
SPINOUS, } times said of mucronate,
or spine-tipped feathers.
SPURIOUS, a. False; imperfect; bastard; rudimentary.
SPURIOUS PRIMARY, n. The first primary, when much reduced in size.
SPURIOUS WING, n. The *alula* or *bastard wing*.
SQUAMOSE, } a. Scaly; scale-like, or
SQUAMOUS, } bearing scales.
STEGANOPODES, n. A group of swimming birds characterized by having the hind toe united, on the inner side, to the inner anterior one by a full web. The group includes the Pelicans and allied families. (Same as *Totipalmi*.)
STEGANOPODOUS, a. Having the hallux connected with the anterior toes, as in the *Steganopodes*.
STELLATE, a. Star shaped.
STELLULATE, a. Resembling little stars.
STERILE, a. Unfruitful; barren.
STIPULA, n. A newly-sprouted feather.
STRAGULUM, n. The mantle, or the back and upper surface of the wings taken together. (Synonymous with *pal-lium*.)
STRIA, n. A streak.
STRIATE, } a. Streaked.
STRIATED, }
STRIDENT, a. Shrill.
STRIGES, n. The name given to the Owl tribe by those who consider these birds as constituting a distinct order.
STRIGINE, a. Owl like; pertaining to, or having characteristics of, the Owl family.
STRUTHIONES, n. The ordinal name of the Ostrich tribe.
STRUTHIONINE, a. Pertaining to, or having the characteristics of, the Ostrich tribe.
STRUTHIOUS, a. Ostrich like.
STYLIFORM, } a. Shaped like a peg or
STYLOID, } pen.
SUBARCULATE, } a. Slightly arched.
SUBARCULATED, }
SUB-BASAL, a. Near the base.
SUBCAUDAL, a. Beneath the tail.
SUBCLASS, n. A group often recognized, having taxonomic rank intermediate between a class and an order.
SUBFAMILY, n. A subdivision of a family, including one or more genera.
SUBGENUS, n. A subdivision of a genus of indefinite value, and frequently not recognized by name except in the grouping of species.
SUBMALAR, a. Beneath the *malus*, or malar region, as a *submalar streak*.
SUBORBITAL, a. Beneath the eye.
SUBORDER, n. A group intermediate in taxonomic rank between an order and a family.
SUBSPECIES, n. A nascent species; a variation, usually geographical, of a species, but not accorded full specific rank on account of the incompleteness of its differentiation; hence, usually a geographical race or form.
SUBTYPICAL, a. Not quite typical; somewhat aberrant.
SUBULATE, a. Awl shaped.
SULCATE, a. Grooved.
SULCUS, n. A groove.
SUPERCILIARY, a. Above the eye. A *superciliary streak*, in its usual sense, denotes a continuous marking of color from the base of the upper mandible over the eye, and extended back above the auriculars to the sides of the occiput.

SUPERCILIUM, n. The eyebrow.
SUPERFAMILY, n. A group containing several families, yet not of ordinary rank. (Next in rank below a suborder.)

SUPERIOR, a. Lying over; topmost, or uppermost.

SUPERORDER, n. A group consisting of one or more orders, but not ranking as high as a class. (Next in rank below a subclass.)

SUPRA-AURICULAR, a. Situated above the auriculars or ear coverts.

SUPRALORAL, a. Situated above the lores.

SUPRAORBITAL, a. Pertaining to the region immediately above the eye.

SYMPHESIS, n. A growing together, as *sympthesis* of the lower jaw.

SYNDACTYLE, SYNDACTYLOUS, SYNGNESIOUS, { *a.* Having two toes coalescent for a considerable portion of their length.

SYNONYM, SYNONYME, { *n.* In natural history, a specific or generic name, which is suppressed on account of having been proposed subsequent to another name for the same object, or for reason of its being otherwise unavailable. Thus, the common Song Sparrow having been first named *fasciata*, in 1788, by Gmelin, the name *melodia*, given by Wilson in 1810, becomes a synonym by reason of its later date. (The opposite of *homonym*, which see.)

T.

TAIL COVERTS, n. The most posterior feathers of the body, or those which immediately cover the basal portion of the tail.

TARSAL, a. Pertaining to the tarsus, so-called.

TARSUS, n. In descriptive ornithology, the leg of a bird, or that portion from the foot (that is, the toes) to the heel joint.

TECTRICES, n. Coverts; especially those of the wing.

TECTRICES ALÆ, { *n.* Wing coverts.

TECTRICES ALARES INFERIORES, n. The under wing coverts, or those of the under surface of the wing.

TECTRICES CAUDÆ, n. Tail coverts.

TECTRICES MEDIÆ, { *n.* The middle wing

TECTRICES PERVERSÆ, { coverts.

TELEOLOGICAL, a. Pertaining to teleology. A *teleological character* is a modification resulting from necessity of adaptation to particular ends. Thus, the naked head and other vulturine aspects of the Old World Vultures and those of the New World are teleological, inasmuch as their mode of living necessitates in both certain modifications of external structure fitting them to act the part of scavengers, their actual (morphological) structure being very different.

TELEOLOGY, n. The science or doctrine of adaptation.

TEMPOTAL, a. Pertaining to the temples.

TENUIROSTRAL, a. Slender billed; pertaining to the obsolete group *Tenuirostres*.

TENUIROSTRES, n. An obsolete and exceedingly artificial group of birds, embracing various slender-billed forms.

TERETE, a. Cylindrical and tapering; fusiform.

TERMINOLOGICAL, a. Pertaining to terminology (?).

TERMINOLOGY, n. The science of calling things by their right names, according to fixed or scientific principles; hence, essentially synonymous with *nomenclature*.

TERTIALS, TERTIARIES, { *n.* Properly, the inner quills of the wing, growing from the elbow or humerus, and usually more or less concealed (in the closed wing) by the longer scapulars. Frequently, however, the graduated inner secondaries are incorrectly so called, especially when distinguished, as they very often are, by different color, size or shape.

TESSELLATED, a. Checkered.

TETRADACTYLE, *a.* Four toed. (Most birds are tetradactyle.)

THORACIC, *a.* Pertaining to the thorax or chest.

THORAX, *n.* The chest or breast.

THROAT, *n.* In descriptive ornithology, the space between the rami of the lower jaw, including also a small portion of the upper part of the foreneck.

THYROID, *a.* Shield shaped.

TIBIA, *n.* In osteology, the principal bone of the leg, between the knee and heel; but in descriptive ornithology, the so-called "thigh" or shin.

TIBIAL, *a.* Pertaining to the tibia.

TOMIUM, *n.* The cutting edge of the mandibles, that of the upper being the *maxillary tomiu*m, that of the lower the *mandibular tomiu*m.

TORQUATE, *a.* Collared.

TOTIPALMATE, *a.* Having the hind toe united to the anterior toes by a web on one side, as in the Pelicans and other *Steganopodes*. (Same as *Steganopodous*.)

TOTIPALMI, *n.* (Same as *Steganopodes*, which see.)

TRACHEOPONÆ, *n.* The name of a natural group of passerine birds, characterized by having the syrinx placed at the lower end of the trachea.

TRANSVERSE, *a.* Crosswise, or at right angles with the longitudinal axis of the body or feather.

TRANSVERSELY, *a.* Crosswise.

TRIDACTYLE, *a.* Three toed.

TRINOMIAL, *a.* Composed of three names. In biology, a name composed of three terms—a generic, a specific, and a subspecific.

TRIVIAL, *a.* Sometimes said of a *specific* name.

TROCHILI, *n.* The ordinal or subordinal name of a natural group of *Picariæ*, including only the Hummingbirds. By most authors, however, the group is accorded only family rank, and associated with the families *Cypselidæ* and *Caprimulgidæ*, in a so-called order *Macrochires*, or *Cypseli*.

TRUNCATE, *a.* Cut squarely off.

TYLARI, *n.* The pads on the under surface of the toes.

TYMPANUM, *n.* Properly the ear drum; but also the naked, inflated air sacs on the neck of some species of Grouse.

TYPE, *n.* Of various signification in ornithology. The *type* of a genus is that species from which the generic characters have been taken, or which is specified as the standard; the *type* of a species is the particular specimen from which the species was originally described. The *type*, or typical form, of a group is that which answers best to the diagnosis of that group.

TYPICAL, *a.* Agreeing closely with the characters assigned to a group, genus, or species.

U.

ULNA, *n.* The posterior bone of the forearm.

ULNAR, *a.* Pertaining to the ulna.

UNARMED, *a.* Said of a toe which has no claw; a tarsus, or wing, which has no spur; etc.

UNCIFORM, }
UNCINATE, } *a.* Hooked.

UNDER PARTS, *n.* The entire lower surface of a bird, from chin to crissum, inclusive. (Same as lower parts.)

UNDER PRIMARY COVERTS, *n.* The primary coverts of the under surface of the wing.

UNDER TAIL COVERTS, *n.* The feathers immediately beneath the tail. (Practically synonymous with *crissum*.)

UNDER WING COVERTS, *n.* The coverts of the under surface of the wing. Taken collectively, the term *lining of the wing*, or *wing lining* is generally used.

UNGUICULATE, *a.* Clawed.

UNGUIS, *n.* A claw.

UNIPAROUS, *a.* Producing but one egg, as the Petrels and Auks.

UPPER PARTS, *n.* The entire upper surface, from forehead to tail, inclusive.

UPPER TAIL COVERTS, *n.* The feathers overlying the base of the tail—sometimes produced beyond its tip and simulating the true tail, as in the Peacock and Paradise Trogon.

UROPYGIAL, *a.* Pertaining to the rump.

UROPYGIUM, *n.* The rump.

V.

VANE, *n.* The whole of a feather, excepting the stem.

VARIETAL, *a.* Pertaining to, or having the characteristics of, a variety.

VARIETY, n. Properly, an individual or unusual and irregular variation from the normal type of form or coloration, as the various breeds or "strains" of domestic animals, but the term is often, though improperly, applied to subspecies, or geographical races.

VENT, n. The anus.

VENTRAL, a. Pertaining to the vent.

VENTRAL REGION, n. The feathers surrounding, or immediately adjacent to, the vent.

VERMICULATE, { *a.* Marked with irregular fine lines,
VERMICULATED, { like the tracks of small worms.

VERMIFORM, a. Worm shaped, as a Woodpecker's tongue.

VERNAL, a. Pertaining to spring.

VERRUCOSE, { *a.* Warty.
VERRUCOUS, }

VERSATILE, a. Susceptible of being turned either way; reversible as to position.

VERTEX, n. The crown, or central portion of the pileum.

VERTICAL, a. Pertaining to the vertex.

VESTITUS, a or n. Clothed; feathered. Clothing, or plumage; as nuptial or breeding plumage.

VEXILLUM, n. The whole of a feather, excepting the stem.

VIBRISSE, n. A bristly or bristle-tipped feather, such as those about the gape of a bird.

VITTA, n. A band of color.

W.

WATTLE, n. A pendulous, somewhat fleshy, cutaneous flap, usually bright colored and often more or less wrinkled, as the dewlap of a Turkey and the gills of the domestic cock.

WEB, n. Either lateral half of the vein of a feather, exclusive of the shaft.

WHISKERED, a. Ornamented by lengthened feathers on the malar region or contiguous portions of the head.

X.

XIPHOID, a. Sword shaped.

Z.

ZONE, n. A broad band of color, completely encircling the circumference of a body.

ZYGODACTYLÆ, n. A group of zygodactyle birds, comprising the families *Rhamphastidæ*, *Capitonidæ*, *Bucconidæ* and *Galbulidæ*. In obsolete systems, the group was much more extensive, embracing all yoke-footed birds, which are now divided into several distinct groups; *e. g.*, the *Pici*, *Anisodactylæ*, and *Coccyges*.

ZYGODACTYLE, a. Yoke toed, or with the toes in pairs, two before and two behind, as in the Woodpeckers, Parrots, etc. Pertaining to the *Zygodactylæ*.

INDEX TO SCIENTIFIC NAMES.

A.		B.	
	PAGE.		PAGE.
<i>Acanthis linaria</i>	422	<i>Asio accipitrinus</i>	296
<i>Accipiter atricapillus</i>	258	<i>wilsonianus</i>	294
<i>cooperi</i>	256	<i>Aythya affinis</i>	84
<i>velox</i>	254	<i>americana</i>	76
<i>Actitis macularia</i>	201	<i>collaris</i>	85
<i>Æchmophorus occidentalis</i>	8	<i>marila nearctica</i>	83
<i>Ægialitis meloda circumcincta</i>	215	<i>vallisneria</i>	77
<i>montana</i>	217		
<i>nivosa</i>	216		
<i>semipalmata</i>	213		
<i>vocifera</i>	212		
<i>Agelaius phoeniceus</i>	398		
<i>Aix sponsa</i>	71		
<i>Ammodramus caudacutus nelsoni</i> ..	449	<i>Bartramia longicauda</i>	196
<i>henslowii</i>	446	<i>Bonasa umbellus</i>	223
<i>lecontei</i>	447	<i>Botaurus exilis</i>	117
<i>sandwichensis alauidus</i>	444	<i>lentiginosus</i>	115
<i>sandwichensis savanna</i>	442	<i>Branta bernicla</i>	100
<i>savannarum passerinus</i>	445	<i>canadensis</i>	98
<i>Ampelis cedrorum</i>	512	<i>canadensis hutchinsii</i>	100
<i>garrulus</i>	510	<i>Bubo virginianus</i>	304
<i>Anas americana</i>	60	<i>virginianus subarecticus</i>	306
<i>boschas</i>	54	<i>Buteo borealis</i>	259
<i>carolinensis</i>	62	<i>borealis calurus</i>	262
<i>cyanoptera</i>	66	<i>borealis kriderii</i>	261
<i>discors</i>	64	<i>borealis harlani</i>	263
<i>fulvigula maculosa</i>	57	<i>latissimus</i>	267
<i>obscura</i>	55	<i>lineatus</i>	264
<i>strepera</i>	58	<i>swainsoni</i>	265
<i>Anhinga anhinga</i>	37		
<i>Anser albifrons gambeli</i>	96		
<i>Anthus pensilvanicus</i>	593		
<i>spragueii</i>	596		
<i>Antrostomus vociferus</i>	342		
<i>Aquila chrysaetos</i>	273		
<i>Archibuteo ferrugineus</i>	271		
<i>lagopus sancti-johannis</i>	269		
<i>Ardea candidissima</i>	123		
<i>cerulea</i>	124		
<i>egretta</i>	122		
<i>herodias</i>	119		
<i>virescens</i>	126		

	PAGE.		PAGE.
Charadrius dominicus.....	209	Ereunetes pusillus.....	181
squatarola.....	208	Erismatura rubida.....	91
Charitonetta albeola.....	88		
Chelidon erythrogaster.....	504	F.	
Chen caerulescens.....	93	Falco columbarius.....	284
hyperborea.....	95	mexicanus.....	280
Chondestes grammacus.....	451	peregrinus anatum.....	282
Chordeiles virginianus.....	347	richardsonii.....	286
virginianus henryi.....	348	rusticolus.....	278
Circus hudsonius.....	252	sparverius.....	287
Cistothorus palustris.....	619	Fregata aquila.....	47
stellaris.....	617	Fulica americana.....	145
Clivicola riparia.....	507		
Coccothraustes vespertina.....	412	G.	
Coccyzus americanus.....	321	Galeoscoptes carolinensis.....	602
erythrophthalmus.....	322	Gallinago delicata.....	160
Colaptes auratus.....	338	Gallinula galeata.....	143
cafer.....	340	Geococcyx californianus.....	319
Colinus virginianus.....	219	Geothlypis formosa.....	578
virginianus texanus.....	222	philadelphia.....	579
Colymbus auritus.....	10	trichas occidentalis.....	581
nigricollis californicus.....	12	Glaucionetta clangula americana.....	86
Compsothlypis americana.....	547	Grus americana.....	132
Contopus borealis.....	364	canadensis.....	133
richardsonii.....	366	mexicana.....	134
virens.....	365	Guiraca caerulea.....	488
Conurus carolinensis.....	315		
Corvus americanus.....	385	H.	
corax sinuatus.....	381	Habia ludoviciana.....	484
cryptoleucus.....	382	melanocephala.....	486
Cyanocephalus cyanocephalus.....	388	Halæetus leucocephalus.....	275
Cyanocitta cristata.....	377	Harporhynchus rufus.....	604
		Helminthophila celata.....	544
D.		peregrina.....	545
Dafila acuta.....	69	pinus.....	540
Dendroica æstiva.....	550	ruficapilla.....	542
auduboni.....	553	Helmitherus vermivorus.....	539
blackburniæ.....	561	Himantopus mexicanus.....	154
cærulea.....	556	Hydrochelidon nigra surinamensis,	85
coronata.....	551		
discolor.....	570	I.	
dominicæ albilora.....	564	Icteria virens.....	583
maculosa.....	554	virens longicauda.....	585
palmarum.....	568	Icterus bullocki.....	405
pennsylvanica.....	558	galbula.....	403
striata.....	559	spurius.....	402
vigorii.....	567	Ictinia mississippiensis.....	250
virens.....	565		
Dolichonyx oryzivorus.....	391	J.	
Dryobates pubescens.....	326	Junco aikeni.....	465
villosus.....	325	hyemalis.....	467
		hyemalis oregonus.....	466
E.			
Ectopistes migratorius.....	237		
Elanoides forficatus.....	247		
Empidonax acadicus.....	367		
minimus.....	370		
pusillus traillii.....	369		

L.		P.	
	PAGE.		PAGE.
<i>Lanius borealis</i>	515	<i>Pandion haliaetus carolinensis</i>	290
<i>ludovicianus</i>	517	<i>Parus atricapillus</i>	631
<i>ludovicianus excubitorides</i>	520	<i>atricapillus septentrionalis</i>	634
<i>Larus argentatus smithsonianus</i>	19	<i>bicolor</i>	629
<i>californicus</i>	21	<i>Passer domesticus</i>	662
<i>delawarensis</i>	23	<i>Passerella iliaca</i>	476
<i>franklinii</i>	25	<i>iliaca schistacea</i>	478
<i>philadelphia</i>	27	<i>Passerina amoena</i>	491
<i>Limosa fedoa</i>	186	<i>ciris</i>	492
<i>hæmastica</i>	187	<i>cyanæa</i>	489
<i>Lophodytes cucullatus</i>	52	<i>Pediocætes phasianellus campestris</i> ,	228
<i>Loxia curvirostra minor</i>	417	<i>Pelecanus erythrorhynchos</i>	43
<i>curvirostra stricklandi</i>	420	<i>Petrochelidon lunifrons</i>	502
<i>leucoptera</i>	421	<i>Peuceaæ cassinii</i>	469
M.		<i>Phalacrocorax dilophus</i>	39
<i>Macrorhamphus scolopaceus</i>	161	<i>mexicanus</i>	42
<i>Megascops asio</i>	302	<i>Phalænoptilus nuttalli</i>	345
<i>Melanerpes carolinus</i>	337	<i>nuttalli nitidus</i>	346
<i>erythrocephalus</i>	334	<i>Phalaropus lobatus</i>	148
<i>torquatus</i>	336	<i>tricolor</i>	150
<i>Meleagris gallopavo</i>	230	<i>Philohela minor</i>	156
<i>Melospiza fasciata</i>	471	<i>Pica pica hudsonica</i>	375
<i>georgiana</i>	474	<i>Picicorvus columbianus</i>	386
<i>lincolni</i>	473	<i>Pinicola enucleator</i>	414
<i>Merganser americanus</i>	49	<i>Pipilo erythrophthalmus</i>	480
<i>serrator</i>	51	<i>maculatus arcticus</i>	482
<i>Merula migratoria</i>	653	<i>Piranga erythromelas</i>	497
<i>migratoria propinqua</i>	655	<i>rubra</i>	499
<i>Micropalama himantopus</i>	165	<i>Plectrophenax nivalis</i>	428
<i>Milvulus forficatus</i>	354	<i>Plegadia guarauna</i>	109
<i>Mimus polyglottos</i>	600	<i>Podilymbus podiceps</i>	14
<i>Mniotilta varia</i>	535	<i>Poliophtila cærulea</i>	639
<i>Molothrus ater</i>	395	<i>Poocætes gramineus</i>	440
<i>Myadestes townsendii</i>	641	<i>Porzana carolina</i>	139
<i>Myiarchus crinitus</i>	359	<i>jamaicensis</i>	142
N.		<i>noveboracensis</i>	141
<i>Numenius borealis</i>	205	<i>Progne subis</i>	501
<i>hudsonicus</i>	204	<i>Protonotaria citrea</i>	537
<i>longirostris</i>	202	Q.	
<i>Nyctala acadica</i>	300	<i>Quiscalus quiscula æneus</i>	410
<i>Nyctea nyctea</i>	307	R.	
<i>Nycticorax nycticorax nævius</i>	128	<i>Rallus elegans</i>	136
<i>violaceus</i>	130	<i>virginianus</i>	138
O.		<i>Recurvirostra americana</i>	152
<i>Oidemia perspicillata</i>	89	<i>Regulus calendula</i>	637
<i>Olor buccinator</i>	108	<i>satrapa</i>	635
<i>columbianus</i>	105	<i>Rhynchophanes meadowii</i>	438
<i>Otocoris alpestris arenicola</i>	374	S.	
<i>alpestris praticola</i>	372	<i>Salpinctes obsoletus</i>	606
		<i>Sayornis phæbe</i>	361
		<i>saya</i>	362

	PAGE.		PAGE.
Scolecophagus carolinus.....	408	Tringa alpina pacifica.....	178
cyanocephalus	409	bairdii	175
Selurus aurocapillus.....	572	canutus	167
motacilla.....	576	fuscicollis	173
noveboracensis notabilis.....	574	maculata	169
Setophaga ruticilla.....	591	minutilla	176
Sialia arctica.....	659	Trochilus colubris.....	35
sialis	656	Trogodytes ædon aztecus.....	612
Sitta canadensis.....	627	hiemalis.....	614
carolinensis.....	626	Tryngites subruficollis.....	198
Spatula clypeata.....	67	Turdus aliciæ.....	647
Speotyto cunicularia hypogæa....	310	aonalaschkæ pallasi.....	651
Sphyrapicus varius.....	330	fuscescens.....	645
varius nuchalis.....	331	mustelinus.....	643
Spinus pinus.....	427	ustulatus swainsoni.....	650
tristis	425	Tympanuchus americanus.....	225
Spiza americana.....	493	pallidicinctus	227
Spizella monticola.....	458	Tyrannus tyrannus.....	356
monticola ochracea.....	460	verticalis.....	358
pallida	461		
pusilla	464	U.	
socialis.....	460	Urinator imber.....	16
Stelgidopteryx serripennis.....	509		
Sterna antillarum.....	34	V.	
forsteri.....	30	Vireo atricapillus.....	531
hirundo	32	bellii	534
Strix pratincola.....	292	flavifrons.....	524
Sturnella magna.....	400	gilvus.....	523
magna neglecta.....	401	noveboracensis.....	532
Sylvania canadensis.....	509	olivaceus.....	522
mitrata.....	586	solitarius.....	528
pusilla	588		
Symphemia semipalmata inornata,	194		
Syrnium nebulosum.....	298		
		X.	
T.		Xanthocephalus xanthocephalus...	396
Tachycineta bicolor.....	506	Xema sabinii.....	28
Tantalus loculator.....	112		
Thryothorus bewickii .a.....	610	Z.	
bewickii bairdi.....	611	Zenaidura macroura.....	241
ludovicianus	608	Zonotrichia albicollis.....	457
Totanus flavipes.....	191	intermedia.....	456
melanoleucus	189	leucophys.....	454
solitarius.....	192	querula.....	453

INDEX TO POPULAR NAMES.

A.	PAGE.
Additions.....	661
Anhinga	37
Avocet, American.....	152

B.	
Baldpate	60
Bittern, American.....	115
Least	117
Blackbird, Brewer's.....	409
Red-winged.....	398
Rusty	408
Yellow-headed.....	396
Bluebird.....	656
Mountain.....	659
Bobolink.....	391
Bob-white.....	219
Texan.....	222
Brant.....	100
Buffle-head.....	88
Bunting, Indigo.....	489
Lark.....	495
Lazuli.....	491
Painted.....	492

C.	
Canvas-back	77
Cardinal.....	483
Catbird.....	602
Chat, Long-tailed.....	585
Yellow-breasted.....	583
Chickadee.....	631
Long-tailed.....	634
Coot, American.....	145
Cormorant, Double-crested	39
Mexican.....	42
Cowbird.....	395
Crane, Little Brown.....	133
Sandhill.....	134
Whooping.....	132
Creepers, Brown.....	622

	PAGE.
Crossbill, American.....	417
Mexican.....	420
White-winged.....	421
Crow, American.....	385
Cuckoo, Black-billed.....	322
Yellow-billed.....	321
Curlew, Eskimo.....	205
Hudsonian.....	204
Long-billed.....	202

D.	
Dickcissel	493
Dove, Mourning.....	241
Dowitcher, Long-billed.....	161
Duck, American Scaup.....	83
Black	55
Mottled	57
Lesser Scaup.....	84
Ring-necked.....	85
Ruddy	91
Wood	71

E.	
Eagle, Bald.....	275
Golden.....	273
Egret, American.....	122
Eliminations.....	661
Explanations.....	5

F.	
Falcon, Prairie.....	280
Finch, Purple.....	416
Flicker.....	338
Red-shafted	340
Flycatcher, Acadian.....	367
Crested.....	359
Least	370
Olive-sided	364
Scissor-tailed	354
Traill's.....	369

G.		I.	
	PAGE.		PAGE.
Gadwall.....	58	Ibis, White-faced Glossy.....	109
Gallinule, Florida.....	143	Wood.....	112
Gnatcatcher, Blue-gray.....	639		
Godwit, Hudsonian.....	187	J.	
Marbled.....	186	Jay, Blue.....	377
Golden-eye, American.....	86	Piñon.....	388
Goldfinch, American.....	425	Junco, Oregon.....	468
Goose, American White-fronted.....	96	Slate-colored.....	467
Blue.....	93	White-winged.....	465
Canada.....	98		
Hutchins?.....	100	K.	
Lesser Snow.....	95	Killdeer.....	212
Goshawk, American.....	258	Kingbird.....	356
Grackle, Bronzed.....	410	Arkansas.....	358
Grebe, American Eared.....	12	Kingfisher, Belted.....	323
Horned.....	10	Kinglet, Golden-crowned.....	635
Pied-billed.....	14	Ruby-crowned.....	637
Western.....	8	Kite, Mississippi.....	250
Grosbeak, Black-headed.....	489	Swallow-tailed.....	247
Blue.....	488	Knot.....	167
Evening.....	412		
Pine.....	414	L.	
Rose-breasted.....	484	Lark, Desert Horned.....	374
Grouse, Prairie Sharp-tailed.....	228	Prairie Horned.....	372
Ruffed.....	223	Longspur, Chestnut-collared.....	436
Gull, American Herring.....	19	Lapland.....	430
Bonaparte's.....	27	McCown's.....	438
California.....	21	Smith's.....	434
Franklin's.....	25	Loon.....	16
Ring-billed.....	23		
Sabine's.....	28	M.	
Gyr Falcon, Gray.....	278	Magpie, American.....	375
		Mallard.....	54
H.		Man-o'-War Bird.....	47
Hawk, American Rough-legged.....	269	Martin, Purple.....	501
American Sparrow.....	287	Meadowlark.....	400
Broad-winged.....	267	Western.....	401
Cooper's.....	256	Merganser, American.....	49
Duck.....	282	Hooded.....	52
Harlan's.....	263	Red-breasted.....	51
Krider's.....	261	Merlin, Richardson's.....	286
Marsh.....	252	Mockingbird.....	600
Pigeon.....	284		
Red-shouldered.....	264	N.	
Red-tailed.....	259	Nighthawk.....	347
Sharp-shinned.....	254	Western.....	348
Swainson's.....	265	Nutcracker, Clark's.....	386
Hen, Prairie.....	225	Nuthatch, Red-breasted.....	627
Lesser Prairie.....	227	White-breasted.....	626
Heron, Black-crowned Night.....	128		
Great Blue.....	119	O.	
Green.....	126	Oriole, Baltimore.....	403
Little Blue.....	124	Bullock's.....	405
Snowy.....	123	Orchard.....	402
Yellow-crowned Night.....	130		
Hummingbird, Ruby-throated....	351		

	PAGE.		PAGE.
Osprey, American.....	290	Sandpiper, Pectoral.....	169
Oven-bird	572	Red-backed.....	178
Owl, American Barn.....	292	Semipalmated.....	181
American Long-eared.....	294	Solitary	192
Barred.....	298	Spotted	201
Burrowing.....	310	Stilt.....	165
Great Horned.....	304	White-rumped.....	173
Saw-whet.....	300	Sapsucker, Red-naped.....	331
Screech.....	302	Yellow-bellied.....	330
Short-eared.....	296	Seoter, Surf.....	89
Snowy.....	307	Shoveller.....	67
Western Horned.....	306	Shrike, Loggerhead.....	517
		Northern.....	515
P.		White-rumped.....	520
Paroquet, Carolina.....	315	Siskin, Pine.....	427
Pelican, American White.....	43	Snipe, Wilson's.....	160
Pewee, Wood.....	365	Snowflake.....	428
Western Wood.....	366	Solitaire, Townsend's.....	641
Phalarope, Northern.....	148	Sora.....	139
Wilson's.....	150	Sparrow, Cassin's.....	469
Phoebe.....	361	Chipping.....	460
Say's.....	362	Clay-colored.....	461
Pigeon, Passenger.....	237	English.....	662
Pintail.....	69	Field.....	464
Pipit, American.....	593	Fox.....	476
Sprague's.....	596	Grasshopper.....	445
Plover, American Golden.....	209	Harris's.....	453
Belted Piping.....	215	Henslow's.....	446
Black-bellied.....	208	Intermediate.....	456
Mountain.....	217	Lark.....	451
Semipalmated.....	213	Leconte's.....	447
Snowy.....	216	Lincoln's.....	473
Poor-will.....	345	Nelson's.....	449
Frosted.....	346	Savanna.....	442
		Slate-colored.....	478
R.		Song.....	471
Rail, Black.....	142	Swamp.....	474
King.....	136	Tree.....	458
Virginia.....	138	Vesper.....	440
Yellow.....	141	Western Savanna.....	444
Raven, Mexican.....	381	Western Tree.....	460
White-necked.....	382	White-crowned.....	454
Redhead.....	76	White-throated.....	457
Redpoll.....	422	Stilt, Black-necked.....	154
Redstart, American.....	591	Swallow, Bank.....	507
Red-tail, Western.....	262	Barn.....	504
Road-runner.....	319	Cliff.....	502
Robin, American.....	653	Rough-winged.....	509
Western.....	655	Tree.....	506
Rough-leg, Ferruginous.....	271	Swan, Trumpeter.....	108
		Whistling.....	105
		Swift, Chimney.....	349
S.		T.	
Sanderling.....	184	Tanager, Scarlet.....	497
Sandpiper, Baird's.....	175	Summer.....	499
Bartramian.....	196	Teal, Blue-winged.....	64
Buff-breasted.....	198	Cinnamon.....	66
Least.....	176	Green-winged.....	66

	PAGE.		PAGE.
Tern, Black.....	35	Warbler, Mourning.....	579
Common.....	32	Myrtle.....	551
Forster's.....	30	Nashville.....	542
Least.....	34	Orange-crowned.....	544
Thrasher, Brown.....	604	Palm.....	568
Thrush, Gray-cheeked.....	647	Parula.....	547
Hermit.....	651	Pine.....	567
Olive-backed.....	650	Prairie.....	570
Wilson's.....	645	Prothonotary.....	537
Wood.....	643	Sycamore.....	564
Titmouse, Tufted.....	629	Tennessee.....	545
Topography of a Bird.....	4	Wilson's.....	588
Towhee.....	480	Worm-eating.....	539
Arctic.....	482	Yellow.....	550
Turkey, Wild.....	230	Water-Thrush, Grinnell's.....	574
V.		Louisiana.....	576
Vireo, Bell's.....	534	Waxwing, Bohemian.....	510
Black-capped.....	531	Cedar.....	512
Blue-headed.....	528	Whip-poor-will.....	342
Red-eyed.....	522	Willet, Western.....	194
Warbling.....	523	Woodcock, American.....	156
White-eyed.....	532	Woodpecker, Downy.....	326
Yellow-throated.....	524	Hairy.....	325
Vulture, Black.....	245	Lewis's.....	336
Turkey.....	243	Pileated.....	332
W.		Red-bellied.....	337
Warbler, Audubon's.....	553	Red-headed.....	334
Black and White.....	535	Wren, Baird's.....	611
Blackburnian.....	561	Bewick's.....	610
Black-poll.....	559	Carolina.....	608
Black-throated Green.....	565	Long-billed Marsh.....	619
Blue-winged.....	540	Rock.....	606
Canadian.....	589	Short-billed Marsh.....	617
Cerulean.....	556	Winter.....	614
Chestnut-sided.....	558	Western House.....	612
Hooded.....	586	Y.	
Kentucky.....	578	Yellow-legs.....	191
Magnolia.....	554	Greater.....	189
		Yellow-throat, Western.....	581

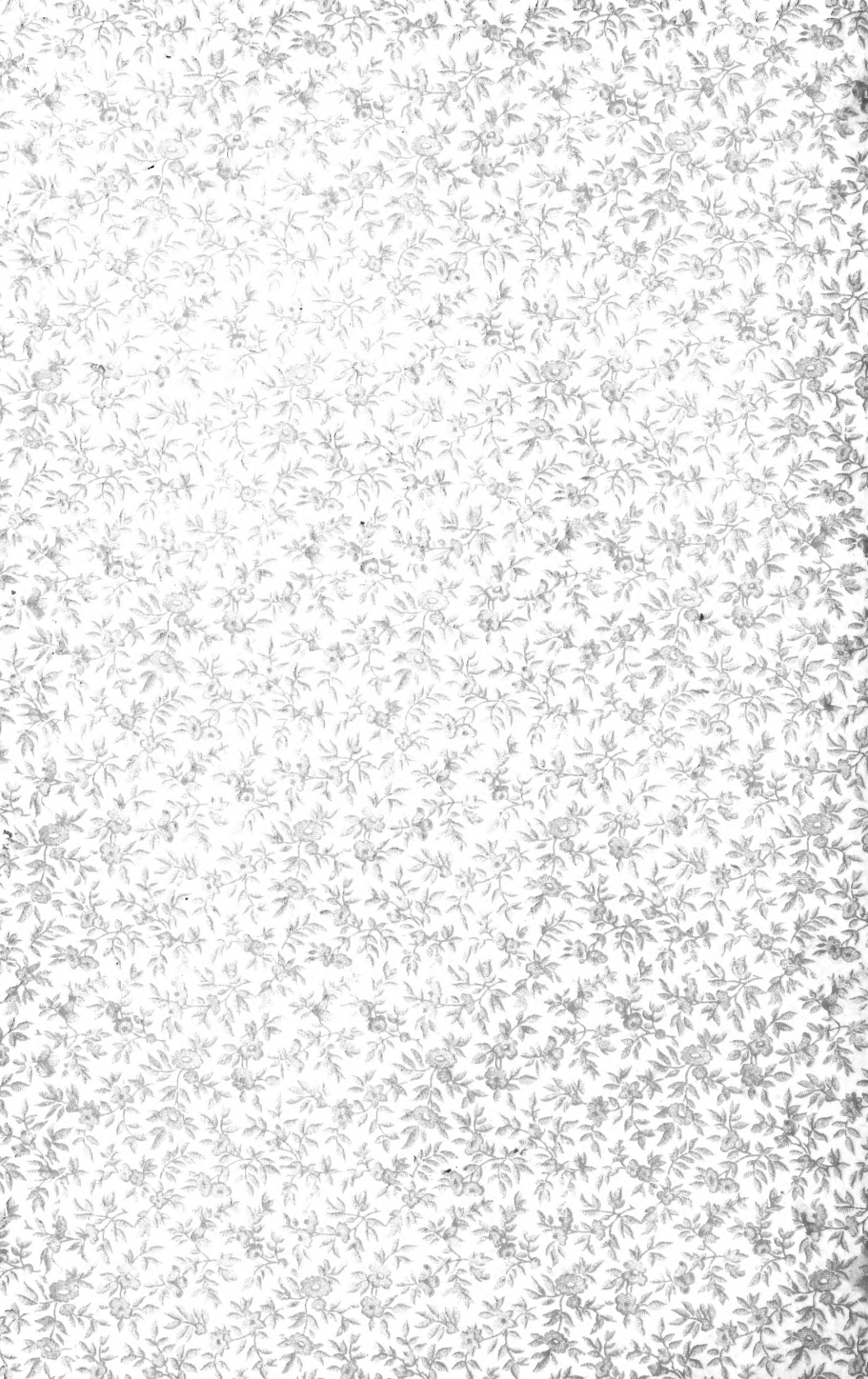
INDEX TO PLATES.

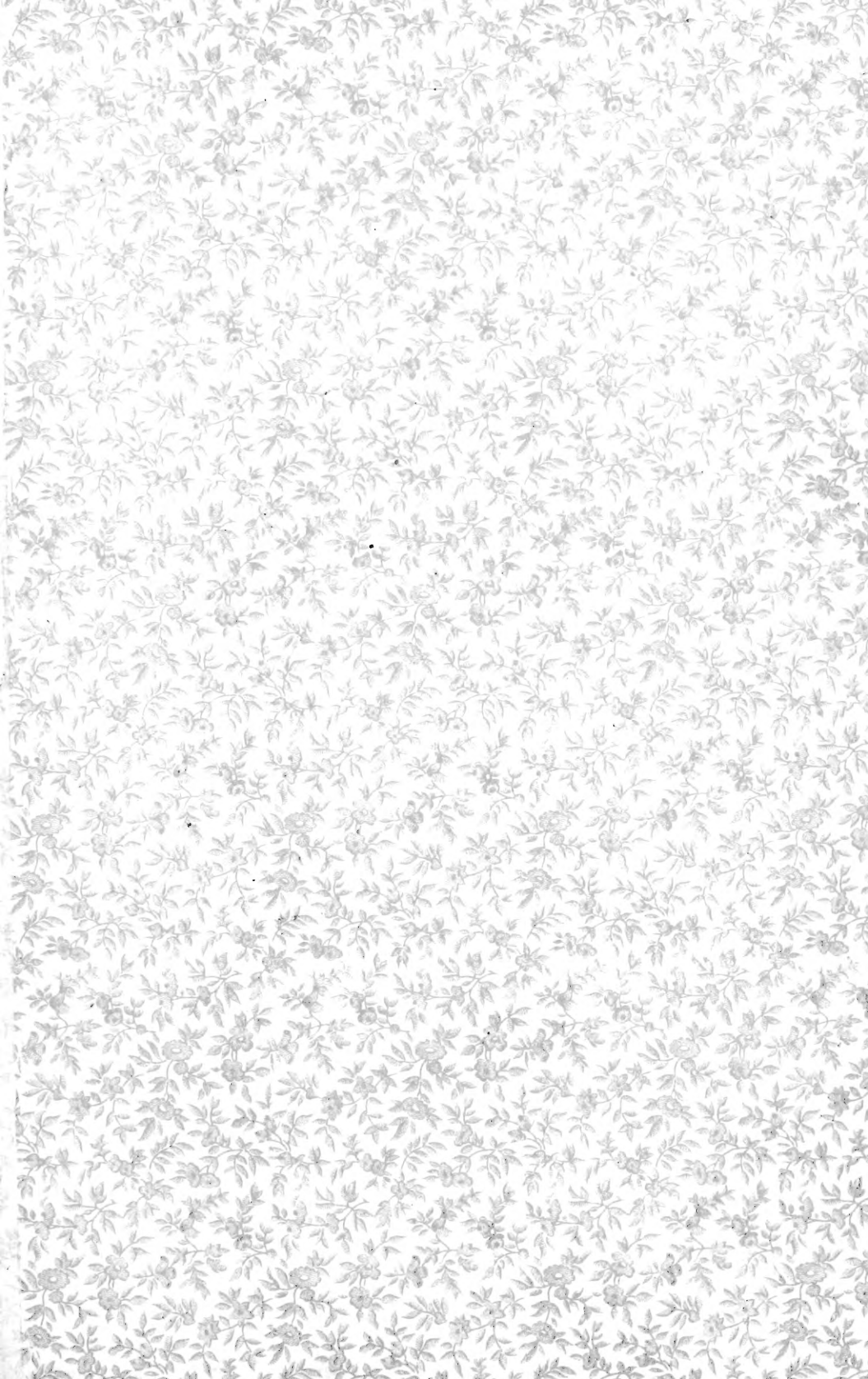
	PAGE.		PAGE.		PAGE.
PLATE I	7	PLATE XIII	219	PLATE XXV	385
PLATE II	19	PLATE XIV	231	PLATE XXVI	403
PLATE III	37	PLATE XV	247	PLATE XXVII	423
PLATE IV	49	PLATE XVI	259	PLATE XXVIII	451
PLATE V	59	PLATE XVII	265	PLATE XXIX	473
PLATE VI	71	PLATE XVIII	275	PLATE XXX	493
PLATE VII	87	PLATE XIX	287	PLATE XXXI	515
PLATE VIII	99	PLATE XX	295	PLATE XXXII	545
PLATE IX	119	PLATE XXI	307	PLATE XXXIII	573
PLATE X	137	PLATE XXII	325	PLATE XXXIV	601
PLATE XI	169	PLATE XXIII	343	PLATE XXXV	629
PLATE XII	199	PLATE XXIV	365		

NOTE.—I regret that some of the illustrations are not brought out as fully and distinctly as they ought to have been, and that the shadows upon many shade so deeply. Had the plates been received in time, the defective ones would have been corrected, but the book was ready for binding long before their receipt, and the work could not be delayed longer.

N. S. G.







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